Med
STORAGE
Sacramento, - Cal.
R
31
I85
Ser.3
v.93
no.246
Biological & Medical Serials

THE DUBLIN JOURNAL OF MEDICAL SCIENCE:

[*Late* DUBLIN QUARTERLY JOURNAL OF MEDICAL SCIENCE.]

CONTAINING

ORIGINAL COMMUNICATIONS,

REVIEWS, ABSTRACTS, AND REPORTS,

IN

Medicine, Surgery, and Collateral Sciences.

Edited by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; &c.

THIRD SERIES.

No. CCXLVI.

JUNE,

1892.

Biological & Medical
402405 h
27.4.92

DUBLIN: FANNIN & CO., GRAFTON-STREET,

To whom Communications for the Editor and Books for Review are to be addressed.

LONDON: LONGMANS & CO.; SIMPKIN, MARSHALL & CO.

EDINBURGH: JAMES THIN.

ANNUAL SUBSCRIPTION, £1.—SINGLE NUMBER, 2s

N the treatment of *Anæmia*, *Epilepsy*, *Hysteria*, *Neuralgia*, and *Nervous Exhaustion*, FLETCHERS' HYDROBROMATES are especially valuable.

In cases where even small doses of QUININE produce severe head symptoms, the HYDROBROMATES may be freely administered without the slightest disagreeable result.

Patients intolerant of IRON in every other form can readily assimilate the HYDROBROMATE combination.

Fletchers' Hydrobromate Syrups

THESE Preparations can now be prescribed in *original bottles, containing four fluid ounces, each provided with glass measure and stirring-rod.*

Physicians wishing to order FLETCHERS' HYDROBROMATES are respectfully invited to prescribe them in this form, as various imitations of the genuine compounds are frequently substituted.

Fletcher, Fletcher & Stevenson,

Manufacturing Chemists, Holloway, London, N.

Advertisements connected with Literature and the Arts.

NOW READY, with Coloured Plates and numerous Charts. 560 pp. Price 15s.

TEXT-BOOK

OF THE

ERUPTIVE AND CONTINUED FEVERS.

BY

JOHN WILLIAM MOORE, B.A., M.D., M.CH., UNIV. DUBL.;

FELLOW AND REGISTRAR OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND;
PHYSICIAN TO THE MEATH HOSPITAL, DUBLIN;
JOINT PROFESSOR OF PRACTICE OF MEDICINE IN THE SCHOOLS OF SURGERY OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND;
CONSULTING PHYSICIAN TO CORK-STREET FEVER HOSPITAL, DUBLIN, AND TO THE WHITWORTH HOSPITAL, DRUMCONDRA;
EX-SCHOLAR AND DIPLOMATE IN STATE MEDICINE OF TRINITY COLLEGE, DUBLIN.

Dublin: FANNIN & Co., 41 Grafton-street.
London: BAILLIÈRE, TINDALL, & COX. Bristol: JOHN WRIGHT & Co.
Edinburgh: JAMES THIN.

Just Published. Price 1s.

ACUTE DOUBLE PNEUMONIA

SUCCESSFULLY TREATED BY

BLEEDING AND INHALATION OF OXYGEN.

By GEORGE FOY, F.R.C.S.I.;

SURGEON TO THE WHITWORTH HOSPITAL, DRUMCONDRA.

DUBLIN: FANNIN & CO., 41 GRAFTON-STREET.

Just Published, Third Edition, price 1s. 6d. net.

TABLES

FOR

THE DIAGNOSIS AND TREATMENT

OF

SYPHILIS.

BY

JOHN K. BARTON, M.D., F.R.C.S.I.,

Senior Surgeon to the Adelaide Hospital; Past President of the Royal College of Surgeons in Ireland; Consulting Surgeon to the Cripples' Home, Bray; Late Lecturer in Surgery, Carmichael College, &c.;
Author of "The Pathology and Treatment of Syphilis," &c.

Dublin: FANNIN & Co., 41 Grafton-street.
London: BAILLIÈRE, TINDALL, & COX, King William-street.
Edinburgh: E. THIN, South Bridge.

CONDENSED PRICE LIST OF

THE F. A. DAVIS COMPANY'S PUBLICATIONS,

40 Berners-st., LONDON, W.

Depot for Ireland: **FANNIN & CO.**, 41 Grafton-street.

Annual of the Universal Medical Sciences. Issue of 1888. 5 vols. 8vo. Illustrated. Cloth, £5 12s.; Half-Russia, £7. Pp. 2,600.

Annual of the Universal Medical Sciences. Issue of 1889. 5 vols. 8vo. Illustrated. Cloth, £4 7s.; Half-Russia, £5 15s. Pp. 2,600.

Annual of the Universal Medical Sciences. Issue of 1890. 5 vols. 8vo. Illustrated. Cloth, £4 7s.; Half-Russia, £5 15s. Pp. 2,600.

Annual of the Universal Medical Sciences. Issue of 1891. 5 vols. 8vo. Illustrated. Cloth, £4 7s.; Half-Russia, £5 15s.

Bashore—Improved Clinical Charts. Per Tablet of 50, size, 8 by 12 inches, 3s. 6d.

Bashore—Bedside Charts, improved by A. O. Ward, M.D.—100 Charts (threefold) in packet, size, 3 by 5½ inches, 4s.; Single Slips, 100 in packet, 3s.; Blank Memorandum Slips (threefold), 2s. 6d. per 100.

Bowen—Materia Medica, Pharmacy, and Therapeutics. 12mo. Cloth, 8s. 6d. Pp. 370.

Capp—The Daughter: Her Care and Instruction in Regard to Health. 12mo. Cloth, 5s. 6d.

Cathell—Book on the Physician Himself. Ninth Edition. 8vo. Cloth, 11s. 6d. Pp. 289.

Clevenger—Spinal Concussion. Illustrated. 8vo. Cloth, 14s. Pp. 359.

Davis—Diseases of the Heart, Lungs, and Kidneys. 12mo. In preparation.

Demarquay—Oxygen and Other Gases in Medicine and Surgery. Translated by Samuel S. Wallian, A.M., M.D. Illustrated. 8vo. Cloth, 11s. 6d. Pp. 316.

Edinger—Twelve Lectures on the Structure of the Central Nervous System, for Physicians and Students. Second Edition. Illustrated. Translated from the German by Willis H. Vittum, M.D., and Edited by C. E. Riggs, M.D. 8vo. Cloth, 10s. Pp. 230.

Eisenberg—Bacteriological Diagnosis. Translated from the German, with permission of the author, by Norval H. Pierce, M.D. 8vo. Cloth, 8s. 6d. In Press.

Goodell—Lessons in Gynæcology. Illustrated. 8vo. Cloth, 22s. 6d.; Sheep, 28s. Pp. 578.

Guernsey—Plain Talks on Avoided Subjects. 16mo. Cloth, 6s. Pp. 126.

Hare—Epilepsy: Its Pathology and Treatment. 12mo. Cloth, 6s. 6d. Pp. 228.

James—American Resorts, with Notes upon their Climate. 8vo. Cloth, 11s. 6d. Pp. 285.

Journal of Laryngology, Rhinology, and Otology: an Analytical Record of Current Literature relating to the Throat, Nose, and Ear. 13s. (3 Dollars) per annum, post free; single copies, 1s. 3d.

The F. A. Davis Company's Publications—continued.

Keating and Edwards—Diseases of the Heart and Circulation in Children. Illustrated. 8vo. Cloth, 8s. 6d. Pp. 228.

Keating—Record-Book of Medical Examinations for Life Insurance. 16mo. No. 1, for 100 Examinations, cloth, 3s. 6d.; No. 2, for 200 Examinations, 4s. 6d.

Liebig and Rohe—The Practical Application of Electricity in Medicine and Surgery. Illustrated. 8vo. Cloth, 11s. 6d. Pp. 383.

Manton—Childbed: Its Management: Diseases and their Treatment. In preparation.

Massey—Electricity in the Diseases of Women, Second Edition. Illustrated. 12mo. Cloth, 8s. 6d. Pp. 240.

Mears—Practical Surgery. Illustrated. 12mo. Cloth, 13s. 6d. Pp. 794.

Medical Bulletin. A Monthly Journal of Medicine and Surgery. Per year, 5s.

Medical Bulletin Visiting List or Physicians' Call-Record. Upon an Entirely New and Convenient Plan. All Leather, 4s. 6d.

Michener—Hand-book of Eclampsia. 16mo. Cloth, 4s. 6d. Pp. 68.

Nissen—Swedish Movement and Massage Treatment. Illustrated. 12mo. Cloth, 6s. Pp. 128.

Physicians' All-Requisite Account-Book. Quarto. For 900 Accounts per year, 28s.; for 1800 Accounts per year, 42s.

Physicians' Interpreter. In four languages. Flexible Leather. 6s. Pp. 206. Size, 5 by $2\frac{3}{4}$ inches, 6s.

Price and Eagleton—Three Charts of the Nervo-Vascular System. Per set, 3s. 6d.

Purdy—Diabetes: Its Causes, Symptoms, and Treatment. 12mo. Cloth, 6s. 6d. Pp. 200.

Ranney—Diseases of the Nervous System. Illustrated. 8vo. Cloth, 32s.; Sheep, 37s. 6d.; Half-Russia, 40s. Pp. 780.

Rohe—Text-book of Hygiene. Second Edition. Illustrated. 8vo. Cloth, 14s. Pp. 400.

Sajous—On Hay Fever. Illustrated. 8vo. Cloth, 6s. Pp. 103.

Sajous—Diseases of the Nose and Throat. Illustrated. 8vo. Cloth, 22s. 6d.; Sheep, 28s.; Half-Russia, 28s. Pp. 439.

Sanne—Diphtheria, Croup, and Tracheotomy. Illustrated. 8vo. Cloth, 22s. 6d.; Sheep, 28s. Pp. 657.

Satellite—A Monthly Review of the Progress of Practical Medicine throughout the World. 7s. 6d. per annum, post free; single copies, 6d.

Senn—Principles of Surgery. Illustrated. 8vo. Cloth, 24s. 6d; Sheep, 30s. Pp. 611.

Shoemaker—The Oleates. Second Edit. 12mo. Cloth, 8s. 6d. Pp. 298.

Shoemaker and Aulde—Materia Medica, Pharmacology, and Therapeutics. 8vo. Volume I. Cloth, 14s. Pp. 353.

Smith, R. Meade—Physiology of the Domestic Animals. Illustrated. 8vo. Cloth, 28s.; Sheep, 32s. Pp. 938.

Stewart—Obstetric Synopsis. Illustrated. 12mo. Cloth, 6s. Pp. 202.

Ultzman—Genito-Urinary Neuroses. Translated by GARDNER W. ALLEN, M.D. Illustrated. 12mo. Cloth, 6s. Pp. 160.

Witherstine—The International Pocket Medical Formulary. 16mo. Bound in Flexible Leather, with Flap, 11s. 6d. 275 printed pages besides extra blank leaves.

Young—Synopsis of Human Anatomy. Illustrated. 12mo. Cloth, 8s. 6d. Pp. 390.

The F. A. Davis Company's Publications—continued.

OUR LATEST.

Capp, William M., M.D.—The Daughter: Her Health, Education, and Wedlock. Homely Suggestions for Mothers and Daughters. Pp. 144. Price 5s. 6d.

Hare, Hobart Amory, M.D., B.Sc.—Fever: its Pathology and Treatment by Antipyretics. 12mo. Cloth, 6s. 6d. Pp. 166.

Mackenzie, Sir Morell—Twenty Cases Treated by Tuberculin. Price 1s. nett.

Senn, N., M.D., Ph.D., Milwaukee, Wisc.—Principles of Surgery. 8vo. Over 100 Illustrations. Cloth, 24s. 6d.; all leather, 30s. Pp. 611.

Shoemaker, John V., A.M., M.D., Philadelphia, Pa.—Heredity, Health, and Personal Beauty. In one royal 8vo volume. 14s. Pp. 422.

Shoemaker, John V., A.M., M.D.—Materia Medica, Pharmacology, and Therapeutics. Vol. II. 8vo. Pp. 625. 19s., in Cloth.

Sozinskey, Thomas S., M.D., Ph.D.—Medical Symbolism. 12mo. Cloth, 6s. Pp. 171.

Wheeler, H. A., M.D.—Abstracts of Pharmacology. 5½ by 8 inches. Pp. 180. Cloth, 8s. 6d.

JUST PUBLISHED.

Boenning, H. C., M.D.—A Treatise on Practical Anatomy. Illustrated. 8vo. Pp. 481. Cloth, 14s.

Buret.—Syphilis: To-Day and in Antiquity. To be completed in three 12mo volumes. Volume I. Syphilis in Antiquity. Pp. 226. Cloth, 6s. 6d.

Coltman, R., Jr., M.D.—The Chinese: their Present and Future: Medical, Political, and Social. 8vo. Pp. 250. Cloth, 10s.

Davis, N. S., Jr.—Consumption: How to Prevent it, and how to Live with it. 12mo. Pp. 141. Cloth, 4s.

Huidekoper, R. S., M.D.—The Age of the Domestic Animals. 8vo. 200 Engravings. Pp. 217. Cloth, 10s.

Nissen, Hartvig.—A B C of the Swedish System of Educational Gymnastics. A Practical Handbook for School Teachers and the Home. Illustrated. 12mo. Pp. 107. Cloth, 4s.

Remondino, P. C., M.D.—Circumcision: its History, Modes of Operation. &c. 12mo. Pp. 346. Cloth, 6s. 6d.; paper, 3s.

Remondino, P. C., M.D.—Southern California. 12mo. Cloth, 6s. 6d.

Rohe, George H., M.D., and Lord, M.D.—Practical Manual of "Skin Diseases." 12mo. Cloth, 6s. 6d.

Any books on Medical or Scientific Subjects published in Great Britain or the United States may be had of us or ordered through us.

THE IDEAL VISITING LIST.

Only **ONE** *Entry of Names required for each Month. 3s. 6d. nett. All leather.*

The **PUREST ANIMAL LYMPH**, cultivated from **CALF** to **CALF**, under supervision of the Imperial **HEALTH OFFICE**, at the Institute of Dr. **PISSIN**, in Berlin.

This is the **BEST** and **LEAST EXPENSIVE** of Vaccines offered in England. *[ASK FOR PRICE LIST.*

FANNIN & CO., 41 GRAFTON-ST., DUBLIN.

NOW READY.

TENTH YEAR, 8vo, cloth, about 800 pages. Price 7s. 6d.

THE MEDICAL ANNUAL, 1892.

Illustrated with COLOURED PLATES and in Black and White.

Yearly Circulation exceeds 10,000 Copies.

A Complete Work of Reference for Medical Practitioners, and

DICTIONARY of NEW TREATMENT in MEDICINE, SURGERY, & OBSTETRICS,

With many orginal articles by distinguished Specialists.

SYNOPSIS OF CONTENTS.

Abdominal Surgery.
A. Mayo Robson, F.R.C.S.
Bacteriology (with coloured plates).
M. Armand Ruffer, M.A., M.D.
Bladder and Urethra (with coloured plates). E. Hurry Fenwick, F.R.C.S.
Cancer. W. H. Elam, F.R.C.S.
Children, Diseases of.
Henry Dwight Chapin, M.D., New York.
Dictionary of New Remedies.
Edited by Percy Wilde, M.D.
Digestive Organs, Disease of.
Prof. Dujardin-Beaumetz, M.D., Paris.
Ear, Diseases of
J. Dundas Grant, M.A., M.D., F.R.C.S.
Eye, Diseases of.
W. Lang, F.R.C.S.
Heart, Diseases of.
James R. Leaming, M.D., New York.
Frank W. Jackson, M.D., New York.
Kidney, Diseases of.
Robt. Saundby, M.D., F.R.C.P.
Lungs, Diseases of.
F. de Havilland Hall, M.D., F.R.C.P.
Medicine, General.
F. J. Wethered, M.D.Lond., M.R.C.P.
P. Watson Williams, M.D.Lond.
Nervous System, Diseases of.
G. M. Hammond, A.M., M.D., New York.
Nose, Diseases of (with coloured plate).
Greville Macdonald, M.D.
Obstetrics.
A. H. N. Lewers, M.D.Lond., M.R.C.P.
Orthopædics.
John Ridlon, M.D., New York.
Robt Jones, F.R.C.S.E.
Phthisis.
R. Shingleton Smith, M.D.Lond., B.Sc., F.R.C.P.
Rectum, Surgery of.
H. W. Allingham, F.R.C.S.
Skin, Diseases of.
T. Colcott Fox, B.A., M.B., M.R.C.P.
Surgery, General and Brain.
F. S. Eve, F.R.C.S.
Spinal Surgery.
W. J Thorburn, M.D., F.R.C.S., B.Sc.
Synopsis for 1890-91.
Graham Wills, M.D.
Throat, Diseases of.
P. Watson Williams, M.D., Lond.
Venereal Diseases.
Jon. Hutchinson, Junr., F.R.C.S.
Women, Diseases of.
R. Milne Murray, M.A., M.B., F.R.C.P.
Sanitation.
Jos. Priestley, B.A., M.D., D.P.H.
Photography (illustrated by Collotype Figs.). Andrew Pringle, Esq.

New Inventions and Improvements in Pharmacy, &c., &c.

The large circulation, which exceeds that of any Annual Medical Work, is the best proof of Its Extreme Value to every practitioner who desires to keep abreast of the times.

BRISTOL: JOHN WRIGHT & CO., STONE BRIDGE.

J. & A. Churchill's New Books.

DISEASES of the NERVOUS SYSTEM. (Student's Guide Series.) By J. A. Ormerod, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic. With 66 Illustrations. Fcap. 8vo, 8s. 6d.

CLINICAL LECTURES on MENTAL DISEASES. By T. S. Clouston, M.D., and F.R.C.P.E., Physician Superintendent of the Royal Edinburgh Asylum for the Insane. Third Edition, with 13 Plates. Crown 8vo, 14s.

DISEASES of the RECTUM and ANUS. By Alfred Cooper, F.R.C.S., Senior Surgeon to St. Mark's Hospital for Fistula; and F. Swinford Edwards, F.R.C.S., Surgeon to the West London and St. Peter's Hospitals, and Senior Assistant Surgeon to St. Mark's Hospital. Second Edition, Illustrated and much Enlarged. 8vo, 12s.

NOTES on DENTAL PRACTICE. By Henry C. Quinby, L.D.S.I., President-Elect of the British Dental Association. Second Edition. With 92 Illustrations. 8vo, 9s.

DIFFERENTIATION in RHEUMATIC DISEASES. By Hugh Lane, Surgeon to the Royal Mineral Water Hospital, Bath, and Hon. Medical Officer to the Royal United Hospital, Bath. Second Edition, much Enlarged, with 8 Plates. Crown 8vo, 3s. 6d.

LECTURES on PRACTICAL PHARMACY. By Barnard S. Proctor, formerly Lecturer on Pharmacy in the College of Medicine, Newcastle-on-Tyne. Third Edition, Revised and Enlarged, with 44 Wood Engravings and 32 Lithograph Facsimile Prescriptions. 8vo, 14s.

ON CONTRACTIONS of the FINGERS (Dupuytren's and Congenital Contractions), their Treatment by Subcutaneous Divisions of the Fascia, and Immediate Extension. Also on

HAMMER TOE; its Curability by Subcutaneous Division of the Lateral Ligaments and Immediate Extension. Also on

THE OBLITERATION of DEPRESSED CICATRICES by a Subcutaneous Operation.

By William Adams, F.R.C.S., Consulting Surgeon to the Great Northern Central Hospital; to the National Hospital for the Paralysed and Epileptic; and to the National Orthopædic Hospital. Second Edition, with 8 Plates and 31 Wood Engravings. 8vo. 6s. 6d.

LONDON: 11 NEW BURLINGTON-STREET.

In 8vo, with 8 Plates and 30 Woodcuts, price 20s., cloth, gilt top.

OBSTETRICAL TRANSACTIONS, VOL. XXXIII. Being the Transactions of the Obstetrical Society of London for the Year 1891, with Lists of Officers, Fellows, &c., and Additions to the CATALOGUE of the Society's Library.

London: LONGMANS, GREEN, & CO.

Fannin & Co.'s Announcements.

Just published, medium 8vo, 364 pages, price 9s., Illustrated.

A Handbook of Hospital Practice

and PHYSICAL DIAGNOSIS. By CHRISTOPHER J. NIXON, M.B., LL.D., Univ. Dubl.; M.D. (*Honoris Causâ*), R.U.I.; Senior Physician, Mater Misericordiæ Hospital; Professor of the Theory and Practice of Medicine, Catholic University; Member of the Senate of the Royal University; Fellow, Censor, and Examiner in Medicine, King and Queen's College of Physicians; Examiner in Medicine, Conjoint Examination of the Colleges of Physicians and Surgeons in Ireland.

Now ready, medium 8vo, 180 pp., price 3s. 6d.

Anæsthetics, Ancient & Modern;

their Physiological Action, Therapeutic Use, and Mode of Administration; together with an Historical Résumé of the Introduction of Modern Anæsthetics; and also an account of the more celebrated Anæsthetics in Use from the earliest time to the discovery of Nitrous Oxide. By GEORGE FOY, F.R.C.S.

Just published, price 1s. net.

Address on Bacteriology, delivered at

the Mater Misericordiæ Hospital, May 23, 1890. By EDMOND J. M'WEENEY, M.A., M.B., M.Ch., M.A.O., &c. Together with a Report of the Proceedings on the occasion of the Inauguration of the Bacteriological Laboratory at the above Institution.

Just published, medium 8vo, oblong, price 2s. net.

Short Analytical Tables. Arranged by

EDWIN LAPPER, Member of the King and Queen's College of Physicians in Ireland; Fellow of the Institute of Chemistry of Great Britain; Member of the Society of Analysts; Lecturer on Chemistry; Professor of Chemistry, Royal College of Surgeons, Ireland.

Crown 8vo, with 75 Engravings, 328 pages, reduced to 4s. 6d., or with Coloured Engravings, 6s. 6d.

Anatomy of the Arteries, DESCRIPTIVE AND SURGICAL;

with the Descriptive Anatomy of the Heart. By J. H. POWER, M.D., Fellow and formerly Professor of Surgery, R.C.S.I. With Illustrations from Drawings by B. W. RICHARDSON, Fellow and Examiner, R.C.S.I. Edited by WM. THOMSON, M.D., Fellow and Examiner, R.C.S.I.; Examiner in Surgery, Queen's University.

Dublin: FANNIN & Co., 41 Grafton-street.
London: BAILLIÈRE, TINDALL, & COX; J. & A. CHURCHILL; LONGMANS, GREEN, & Co.
Edinburgh: JAMES THIN. Bristol: J. WRIGHT & Co.

NOW READY, med. 8vo, cloth, 556 pp. With numerous Illustrations. Price 14s.

TRANSACTIONS

OF THE

ROYAL ACADEMY OF MEDICINE

IN IRELAND.

VOL. IX.—1891.

Edited by WILLIAM THOMSON, M.A., F.R.C.S.,

GENERAL SECRETARY;

Surgeon to the Richmond Hospital, Dublin.

DUBLIN: FANNIN & CO., 41 GRAFTON-STREET.

LONDON: BAILLIÈRE, TINDALL, & COX, 20 King William-street, Strand.

BRISTOL: JOHN WRIGHT & CO., Stone Bridge.

EDINBURGH: JAMES THIN, 55 South Bridge.

Miscellaneous Advertisements.

ASTLEY COOPER PRIZE.

The Next Triennial Prize of Three Hundred Pounds

WILL BE AWARDED

TO THE AUTHOR OF THE BEST ESSAY OR TREATISE

ON

"The Anatomical Distribution of the Lymphatic Vessels and the Physical Forces concerned in the movement of the Lymph."

Candidates are informed that their Essays, either legibly written or type-written, in the English Language, or if in a Foreign Language, accompanied by an English Translation, must be sent to Guy's Hospital on or before January 1st, 1895, addressed to the Physicians and Surgeons of Guy's Hospital.

Each Essay or Treatise must be distinguished by a Motto, and accompanied by a sealed envelope containing the Name and Address of the Writer.

For further particulars of the conditions to be complied with, apply to Dr. HALE WHITE, 65 Harley-street, London, W.

Rowntree's ELECT COCOA

Gold Medals, 1889, 1890 and 1891.

PURITY—STRENGTH—FLAVOUR.

The COCOA WORKS, York, England.

INDIAN MEDICAL SERVICE.

INDIA OFFICE,
17*th May*, 1892.

AN EXAMINATION
FOR
FOURTEEN APPOINTMENTS
TO
Her Majesty's Indian Medical Service
WILL BE HELD
In LONDON on the 8th AUGUST, 1892,
AND FOLLOWING DAYS.

Copies of the Regulations for the Examination, with information regarding the Pay and Retiring Allowances, &c., of Indian Medical Officers, may be obtained from the Military Secretary, India Office, London, S.W., to whom the necessary certificates must be sent, so as to reach him not later than Monday, 25th July, 1892.

O. R. NEWMARCH, MAJOR-GENERAL,
Military Secretary.

ARMY MEDICAL DEPARTMENT,
WAR OFFICE,
12*th May*, 1892.

AN EXAMINATION OF CANDIDATES
FOR
TEN COMMISSIONS
IN
The Medical Staff of Her Majesty's Army,
WILL BE HELD AT
THE UNIVERSITY OF LONDON, BURLINGTON GARDENS, W.
(By permission of the Senate),
On the 8th of AUGUST next, and following days.

Application for Admission to the Examination should be made in writing without delay, to the Director-General, Army Medical Department, War Office, London, S.W.

(Signed), W. A. MACKINNON, *Director-General.*

Founded 1805. The Oldest Scottish Insurance Institution

Caledonian Insurance Company.

Head Office:

19, GEORGE-STREET, EDINBURGH.

BOARD OF DIRECTORS.

Chairman—THE HON. E. C. BULLER ELPHINSTONE.

A. A. MACONOCHIE WELWOOD, Esq., of Meadowbank and Garvock.
JOHN WILLIAM YOUNG, Esq., Writer to the Signet.
WILLIAM STUART FRASER, Esq., Writer to the Signet.
PETER HUME MACLAREN, Esq., M.D.
THOMAS ALEX. HOGG, Esq., of Newliston.
PATRICK STIRLING, Esq., Younger, of Kippendavie.
SIR GEORGE WARRENDER, of Lochend, Bart.
GEORGE READMAN, Esq., 9 Moray Place, Edinburgh.
JOHN TURNBULL, Esq., of Abbey St. Bathans, Writer to the Signet.
CHARLES J. HENDERSON, Esq., 6 Drumsheugh Gardens, Edinburgh.
ROBERT HUTTON LEADBETTER, Esq., Merchant, Glasgow.

Manager and Actuary—D. DEUCHAR, F.I.A., and F.F.A.

DUBLIN BRANCH—31 Dame-street.

SECRETARY—JAMES F. WRIGHT. | *ASSISTANT. SEC.*—WILLIAM COOTE.

MEDICAL OFFICER—JAMES LITTLE, M.D., 14 St. Stephen's-green, North.

SOLICITORS—Messrs. MEADE & COLLES, 8 Kildare street.

BANKERS—THE ROYAL BANK OF IRELAND.

Fire Insurances.

Insurances against loss by Fire are granted on the most favourable terms. The Security is unsurpassed, the proportionate amount of Fire Reserve Funds, as compared with the Premium Income, being greatly larger than in the case of most other offices. Losses by Lightning are admitted.

Life Assurance on unusually favourable terms.

CLASS A1.—Moderate Premiums, with Early Bonuses, which may be applied either to increase the sum assured or to make the Policy *payable during life.*

CLASSES A2 and B.—Lowest Premiums, with special Bonus advantages to persons attaining old age.

NEW and SELF-ACTING NON-FORFEITABLE SYSTEM.—Under this System the Surrender Value is applied to pay overdue Premiums, thus preventing the accidental forfeiture of any valuable Policy. Although this plan is new in Great Britain, a similar plan has for some years been carried on with much success in the Australian Colonies. The AUSTRALASIAN INSURANCE AND BANKING RECORD concludes an article on the Non-Forfeitable System in the following terms :—

"It is to the credit of the CALEDONIAN that it should be the first to introduce this liberal feature into practice in Great Britain. As the precursor of a new and better state of things in the Insurance world there it deserves, as we trust it will find, its reward in a large accession of business."

New Life Assurances in 7 years ending 31st December, 1874 £856,399
New Life Assurances in 7 years ending 31st December, 1881 . £1,780,230

The Fire and Life Claims paid exceed Two Millions Sterling.

John Richardson & Co.,

LEICESTER, LIMITED,

THE LARGEST MAKERS OF COATED PILLS IN THE WORLD,

Beg to announce that they have opened the above additional extensive premises for the sole manufacture of

SOLUBLE PEARL-COATED PILLS.

The manufactory being fitted throughout with Steam power, and containing the latest and most improved machinery, the firm are enabled to offer

☞ SPECIALLY LOW TERMS TO LARGE BUYERS

Price List of over 850 *Formulæ and Special Quotations on application.*

The pill making Department is under immediate personal supervision, as it has been without cessation for more than 20 years past.

JOHN RICHARDSON & CO., Leicester, Limited.

ESTABLISHED 1793.

THE NATURAL MINERAL WATERS OF

STATE **VICHY** SPRINGS.

"CELESTINS."
For Diseases of the Kidneys, Gravel, Gout, Rheumatism, Diabetes, &c.

"GRANDE-GRILLE."
For Diseases of the Liver, and Biliary Organs, &c.

"HÔPITAL."
For Stomach Complaints.

"HAUTERIVE."
An Excellent TABLE WATER.

SAMPLES and PAMPHLET FREE to MEMBERS of the MEDICAL PROFESSION ON APPLICATION.

SOLE AGENTS—

INGRAM & ROYLE, 52 Farringdon Street, LONDON, E.C., and 19 South John-street, Liverpool.

DIABETES. VAN ABBOTT'S GLUTEN BREAD. SOYA BREAD, RUSKS, BISCUITS.

DIABETES. And all suitable Foods for Diabetic Patients, Sweetened with Saccharin or Plain.

DELICATE CHILDREN. VAN ABBOTT'S HYPOPHOSPHITE OF LIME BISCUITS.

CONSTIPATION. VAN ABBOTT'S BRAN BISCUITS.

Van Abbott's Dietary Tables, Menu, Cooking Receipts, and Price List post free from

G. VAN ABBOTT & SONS,
Diabetic, Invalid, and Infant Dietetic Depot,
6 Duke-street, Mansions, Grosvenor-square, W. Established 1859.

Samples Free to the Profession.

MEDICAL PLATES.

MEDICAL PLATES and ILLUSTRATIONS
EXECUTED IN VARIOUS COLOURS IN THE BEST STYLE BY

JOHN FALCONER,
53 UPPER SACKVILLE-STREET, DUBLIN

SYR. HYPOPHOS. CO., FELLOWS.

CONTAINS THE ESSENTIAL ELEMENTS of the Animal Organisation—Potash and Lime;

THE OXIDISING AGENTS—Iron and Manganese;

THE TONICS—Quinine and Strychnine;

AND THE VITALISING CONSTITUENT—Phosphorus: the whole combined in the form of a Syrup with a **SLIGHTLY ALKALINE REACTION.**

IT DIFFERS IN ITS EFFECTS FROM ALL ANALOGOUS PREPARATIONS; and it possesses the important properties of being pleasant to the taste, easily borne by the stomach, and harmless under prolonged use.

IT HAS GAINED A WIDE REPUTATION, particularly in the treatment of Pulmonary Tuberculosis, Chronic Bronchitis, and other affections of the respiratory organs. It has also been employed with much success in various nervous and debilitating diseases.

ITS CURATIVE POWER is largely attributable to its Stimulant, Tonic, and Nutritive properties, by means of which the energy of the system is recruited.

ITS ACTION IS PROMPT; it stimulates the appetite and the digestion, it promotes assimilation, and it enters directly into the circulation with the food products.

The prescribed dose produces a feeling of buoyancy, and removes depression and melancholy; HENCE THE PREPARATION IS OF GREAT VALUE IN THE TREATMENT OF MENTAL AND NERVOUS AFFECTIONS. From the fact, also, that it exerts a double tonic influence, and induces a healthy flow of the secretions, its use is indicated in a wide range of diseases.

NOTICE—CAUTION.—The success of Fellows' Syrup of Hypophosphites has tempted certain persons to offer imitations of it for sale. Mr. Fellows, who has examined samples of several of these, finds that no two of them are identical, and that all of them differ from the original in composition, in freedom from acid reaction, in susceptibility to the effects of oxygen when exposed to light or heat, in the property of retaining the strychnine in solution, and in the medicinal effects.

As these cheap and inefficient substitutes are frequently dispense, instead of the genuine preparation, physicians are earnestly requested when prescribing the Syrup, to write "Syr. Hypophos. FELLOWS."

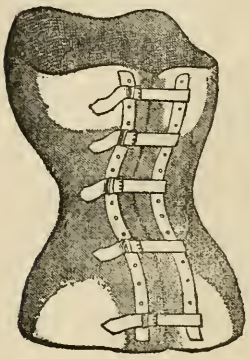
As a further precaution, it is advisable that the Syrup should be ordered in the original bottles (4/- or 7/-); the distinguishing marks which the bottles (and the wrappers surrounding them) bear, can then be examined, and the genuineness—or otherwise—of the contents thereby proved.

Wholesale Agents:

BURROUGHS, WELLCOME & CO.,

SNOW HILL BUILDINGS, LONDON, E.C.

Cocking's Adaptable Poroplastic Jackets and Splints.



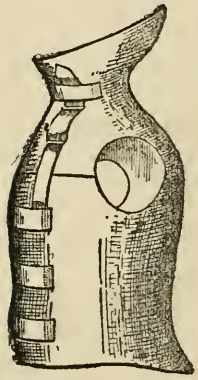
Instructions for Measurement, &c.

JACKET (*in cases of slight deformity*).

Circumference at axilla.
„ waist.
„ hips.
Length from axilla to great trochanter.

In severe angular cases circumference over apex of curve, position of same, and contour should be given ; in lateral cases a description of the case.

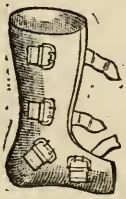
In all cases it should be stated if for male or female.



CERVICAL JACKET.

Same measurements required, and circumference at neck, and length from neck to axilla.

Any part of the Jacket can in the process of Manufacture be left Soft.

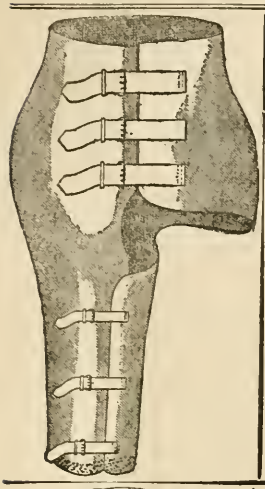


CLUB FOOT.

Circumference below knee.
„ ankle.
„ heel and instep.
Length from below knee to ground.
„ of foot.

SOLE AGENTS FOR DUBLIN—**FANNIN & CO.,**
Manufacturers of Surgical Instruments & Appliances, Medical Booksellers & Publishers,
41 GRAFTON-STREET, DUBLIN.

Cocking's Adaptable Poroplastic Jackets and Splints.



Instructions for Measurement, &c.

HIP SPLINT.

Circumference at waist.
„ hips.
„ thigh, top of
„ above knee.
Length from waist to groin.

State if for right or left side.

LEG SPLINT.

Circumference at top of thigh.
„ above knee.
„ at knee.
„ below knee.
„ calf.
„ ankle.
Length from groin to centre of knee.
„ centre of knee to ankle.

State if for right or left leg.

When the foot-part is required, also circumference of heel and instep, and length from centre of knee to ground.

If the limb is contracted the contour should be given.

Splints are also made in Poroplastic for fracture of Inferior Maxilla, Humerus Elbow-Joint, Forearm, Thigh, Knee-Joint, Leg, Shoulder-Joint, Hand, &c.

These Splints can be fitted perfectly to the Patient if softened either by hot water or in a Heater made for the purpose. When mounted with webbing, hot water will do; if with leather, a Heater should be used. The material becomes quite hard again in two or three minutes.

SOLE AGENTS FOR DUBLIN—**FANNIN & CO.,**
Manufacturers of Surgical Instruments & Appliances, Medical Booksellers & Publishers,
41 GRAFTON-STREET, DUBLIN.

FANNIN & CO.'S

IMPROVED

CLINICAL THERMOMETERS.

	£	s.	d.
Hospital Clinical Thermometers, any length, in Cases with indestructible Index, 2½, 3, 3½, 4, 5, and 6 inches, in Metal Cases - } 2/- &	0	2	6
Fannin & Co.'s Improved Clinical Thermometer, do. do. -	0	3	0
Fannin & Co.'s do. do. with flat back -	0	4	0
Fannin & Co.'s Improved Minute Thermometer - -	0	4	6
Fannin & Co.'s Improved Half-Minute Thermometer, round - - - - - -	0	5	0
Fannin & Co.'s Improved Clinical Thermometer, with Lens Front Magnifying Index - - - -	0	7	0
Fannin & Co.'s Improved Clinical Thermometer, in Bayonet-joint Case - - - - -	0	7	0
Fannin & Co.'s Improved Half-Minute Thermometer, with Lens Front and Permanent Index - - -	0	8	0
Hicks's Patent "Non Plus Ultra" Thermometers, 6/6, 7/6, &	0	8	0
Immisch's Patent Metallic Clinical Thermometers, in Sterling Silver, very portable - } 18/6 &	1	1	0
Surface Clinical Thermometers, in various shapes - - - - } 13/6, 15/–, &	1	1	0
Veterinary Thermometers, in various lengths, enclosed in protecting Tubes - - } 10/6 &	0	14	0

SPECIAL QUOTATION FOR QUANTITIES.

Certificates of Corrections determined by comparison with the Standard Instruments at Kew Observatory supplied with each Thermometer for 1s. 6d. *extra.*

FANNIN & CO. guarantee every Thermometer they supply to be of standard precision.

BREAKAGE of CLINICAL THERMOMETERS.—From the nature of their construction, Clinical Thermometers are exceedingly fragile, and there is considerable risk of breakage in their transmission either through the post or by any other mode of conveyance. We use every precaution in packing, but do not guarantee safe delivery, and can only supply them at the risk of purchasers.

FANNIN & CO.,

Surgeons' Instrument Makers,

41 GRAFTON-STREET, DUBLIN.

TELEPHONE No. 198. Telegraphic Address—"FANNIN, DUBLIN."

THE

DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

EDITED BY

JOHN WILLIAM MOORE, B.A., M.D., M.Ch., Univ. Dubl.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND;
PHYSICIAN TO THE MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY;
CONSULTING PHYSICIAN TO CORK-STREET FEVER HOSPITAL;
EX-SCHOLAR OF TRINITY COLLEGE, DUBLIN.

VOL. XCIII.

JANUARY TO JUNE, 1892.

DUBLIN:
FANNIN AND COMPANY, GRAFTON-STREET.
LONDON: LONGMANS & CO.; SIMPKIN, MARSHALL & CO.
EDINBURGH: JAMES THIN.
PARIS: HACHETTE & CO.

1892.

DUBLIN: PRINTED BY JOHN FALCONER, 53 UPPER SACKVILLE-STREET.

BOOKS, PAMPHLETS, AND PERIODICALS RECEIVED—JUNE, 1892.

1. Epidemics, Plagues, and Fevers: their causes and prevention. By the Hon. Rollo Russell. London: Edward Stanford. 1892. 8vo. Pp. 508.

2. International Clinics. Volume Third. Pp. 372. Volume Fourth. Pp. 382. Edinburgh and London: Young J. Pentland. 1892. 8vo.

3. The Diseases of the Nervous System. By J. A. Ormerod, M.A., M.D. Oxon. London: J. & A. Churchill. 1892. 8vo. Pp. 328.

4. Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. Hale White, M.D., F.R.C.P. London: J. & A. Churchill. 1892. 8vo. Pp. 614.

5. Resection as a Substitute for Primary Amputation. By Thomas H. Manley, M.D., New York City. Danburz, Conn. 1891. Reprint. Pp. 19.

6. Cocaine Analgesia in the treatment of Hæmorrhoids, of Ulcers, Fistulæ, and Fissures in the Ano-rectal Region. By Thomas H. Manley, M.D. Reprint. April, 1892. Pp. 8. St. Louis, Mo.

7. Gastrostomy. By N. Senn, M.D., Ph.D. Chicago. Reprint. 1892. Pp. 15.

8. The Bacteriological World and Modern Medicine. Vol. I. No. 5. March, 1892. Battle Creek, Michigan.

9. Archives of Surgery. By Jonathan Hutchinson, LL.D., F.R.S. Vol. III. No. 12. April, 1892. London: J. & A. Churchill.

10. Bulletin of the Johns Hopkins Hospital. Volume III. Nos. 21 and 22. Baltimore. April, 1892.

11. A Junior Course of Practical Zoology. By A. Milnes Marshall, M.D., F.R.S., assisted by C. Herbert Hurst, Ph.D. Third Edition. London: Smith, Elder, & Co. 1892. 8vo. Pp. 478.

12. Differentiation in Rheumatic Diseases (so-called). By Hugh Lane, L.R.C.P., M.R.C.S. Second Edition. London: J. & A. Churchill. 1892. 8vo. Pp. 121.

13. Diseases of the Eye. By G. E. de Schweinitz, M.D. Philadelphia: W. B. Saunders. 1892. 8vo. Pp. 641.

14. Quain's Elements of Anatomy. Edited by E. A. Schäfer, F.R.S., and G. D. Thane. Vol. II. Part II. Tenth Edition. London: Longmans, Green, & Co. 1892. 8vo.

15. Two cases of Idioglossia. By W. Hale White, M.D., and C. H. Golding-Bird, F.R.C.S. London: Adlard & Co. 1891. Reprint. Pp. 10.

16. Two cases of Removal of Laminæ for Spinal Fracture. By De Forest Willard, M.D. 1891. Reprint. Pp. 10. Philadelphia.

17. Surgical and Mechanical Treatment of the Deformities following Infantile Spinal Paralysis. By De Forest Willard, M.D., Ph.D. 1891. Reprint. Pp. 8. Philadelphia.

18. An Ephemeris of Materia Medica, Pharmacy, Therapeutics, and Collateral Information. April, 1892. Vol. III., No. 6. Brooklyn, N.Y. 1892.

19. Blätter für klinische Hydrotherapie. II. Jahrgang. Nr. 4 und 5. Wien. April und Mai, 1892.

20. The Journal of the British Dental Association. Vol. XIII. No. 4. April 15, 1892. London: Baillière, Tindall & Cox.

21. The Pharmaceutical Journal of Australasia. Vol. V. No. 3. March 15, 1892. [Duplicate copies.]

22. The Medical Bulletin. Vol. XIV. Nos. 3 and 4. March and April, 1892. Philadelphia, U.S.A.: F. A. Davis & Co.

23. An Introduction to Modern Therapeutics. By T. Lauder Brunton, M.D., D.Sc. Edin., F.R.S. London: Macmillan & Co. 1892. 8vo. Pp. 195.

24. Colotomy. By Herbert W. Allingham, F.R.C.S. London: Baillière, Tindall, & Cox. 1892. 8vo. Pp. 199.

25. How to feel the Pulse and what to feel in it. By William Ewart, M.D. Cantab., F.R.C.P. London: Baillière, Tindall, & Cox. 1892. Crown 8vo. Pp. 112.

26. A Manual of the Dental Laboratory. By Charles Hunter. London: Baillière, Tindall, & Cox. 1892. Crown 8vo. Pp. 171.

27. A Pocket Case Book for Practitioners and Students. By Alex. Theodore Brand, M.D., C.M. London : Baillière, Tindall, & Cox. 1892. Crown 8vo.

28. Transactions of the American Surgical Association. Volume the ninth. Philadelphia : William J. Dornan. 1891. 8vo. Pp. 508.

29. The Student's Handbook of Surgical Operations. By Frederick Treves, F.R.C.S. London : Cassell & Co. 1892. 8vo. Pp. 495.

30. On Gall-stones and their Treatment. By A. W. Mayo Robson, F.R.C.S. London : Cassell & Co. 1892. Crown 8vo. Pp. 285.

31. Atlas of Clinical Medicine. By Byrom Bramwell, M.D., F.R.C.P. Edin., F.R.S. Edin. Vol. I. Part IV. Edinburgh : T. & A. Constable. 1892. Quarto.

32. Notes on New Remedies. New York. April, 1892. No. 11.

33. Derby Borough Asylum. Third Annual Report. 1891. Derby : J. W. Simpson. 1891. 8vo. Pp. 46.

34. Year-book of the Scientific and Learned Societies of Great Britain and Ireland. Ninth Annual Issue. London: Charles Griffin & Co. 1892. 8vo. Pp. 233.

35. Lectures on Diseases of the Digestive Organs. By Dr. C. A. Ewald. Translated by Robert Saundby, M.D. Edin., F.R.C.P. Lond. Vol. II. Lectures on Diseases of the Stomach. London : The New Sydenham Society. 1892. 8vo. Pp. 463.

36. The Wife and Mother. By Albert Westland, M.A., M.D., C.M. London : Charles Griffin & Co. 1892. Royal 8vo. Pp. 282.

37. Lunacy Law. By Daniel Chamier. London : Effingham Wilson & Co. 1892. Pp. 104.

38. Intestinal Anastomosis and Suturing. By Robert Abbe, M.D. New York : Trow. Reprint. 1892. Pp. 23.

39. Cases of Gall-bladder Surgery. By Robert Abbe, M.D. Reprint. New York : D. Appleton & Co. 1892. Pp. 10.

40. A Tooth-plate lodged in the Lower Œsophagus more than a year removed by External Œsophagotomy. By Robert Abbe, M.D. 1892.

41. The Palmist and Chirological Review. May, 1892. London : The Record Press. No. 1. Vol. I.

42. Hippocrates, Galen, and Celsus. A series of Bibliographical Demonstrations. By James Finlayson, M.D. 1892. Reprints. Pp. 24, 36, and 16.

43. The Opening Exercises of the Institute of Hygiene of the University of Pennsylvania. Philadelphia. 1892. Pp. 66.

44. Illustrated Lectures on Nursing and Hygiene. By R. Lawton Roberts, M.D. (Lond.), D.P.H. (Camb.). Second Edition. London : H. K. Lewis. 1892. 8vo. Pp. 213.

45. A Text-book of Morbid Histology for Students and Practitioners. By Rubert Boyce, M.B., M.R.C.S. London : H. K. Lewis. 1892. 8vo. Pp. 477.

46. Influenza. By Julius Althaus, M.D., M.R.C.P. Lond. Second Edition. London : Longmans & Co. 1892. 8vo. Pp. 407.

47. Notes on Pathology. By the late R. E. Carrington, M.D. Lond., F.R.C.P. Edited, revised, and amplified by H. Evelyn Crook, M.D., B.S. Lond., F.R.C.S., and Guy Mackeson. London : H. K. Lewis. 1892. 8vo. Pp. 150.

48. The Disinfection of Scarlet Fever and other Infectious Diseases by Antiseptic Inunction. By J. Brendon Curgenven, M.R.C.S., L.S.A. London : H. K. Lewis. 1891. Pp. 25.

50. Guide to the Administration of Anæsthetics. By Henry Davis, M.R.C.S. London : H. K. Lewis. Second Edition. 1892. Pp. 92.

51. Hygiene. Vol. V. No. 53. May, 1892. London : Beaumont & Co.

52. International Medical Magazine. Vol. I. No. 3. April, 1892. Philadelphia : J. B. Lippincott Co.

53. Revue Général de Médecine, de Chirurgie, et d'Obstétrique. Première Année. Nos. 18, 19, 20, 21. 1892. Paris : O. Doin.

54. Studies upon Injuries of the Kidney, Nephrolithotomy, and Nephrorraphy. By Aug. Schachner, M.D. Reprint. 1892. Pp. 70.

55. Archives Cliniques de Bordeaux. Première Année. No. 4. Avril, 1892. Bordeaux : Feret et Fils.

56. Traitement de l'hypertrophie des Amygdales. Par le Dr. E. J. Moure. Paris : Octave Doin. 1892. Pp. 24.

57. Mémoires couronnés et autres Mémoires publiés par l'Académie Royale de Médecine de Belgique. Tome XI. Deuxième Fascicule. Bruxelles : F. Hayez. 1892.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

CONTENTS.

THIRD SERIES, No. CCXLVI.—JUNE 1, 1892.

PART I.—ORIGINAL COMMUNICATIONS.

PAGE

ART. XIX.—Rhinoscleroma. By W. G. T. STORY, M.B., Clinical Assistant at St. Mark's Ophthalmic Hospital, Dublin, - - 457

ART. XX.—On Epistaxis and the Hæmorrhoidal Flux: their Pathogenic Unity and Identity of Cure. By ALEXANDER HARKIN, M.D., F.R.C.S.; Consulting Physician, Mater Infirmorum Hospital, Belfast; Membre de la Société Française d'Hygiéne, Paris, - 461

ART. XXI.—Some Modern Methods of Sewage Treatment. By D. EDGAR FLINN, D.P.H., F.R.C.S.I., M.R.C.P.I.; Examiner in State Medicine, Royal Colleges of Physicians' and Surgeons' Conjoint Examining Board; Surgeon, St. Michael's Hospital, Kingstown; formerly Medical Officer of Health, East Staffordshire—(Illustrated), 476

PART II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

1. Report of the Hyderabad Chloroform Commission. With a Preface by SIR ASMAN JAH, K.C.I.E., Prime Minister of Hyderabad—(*continued*), - - - - - - - - 490

2. Text-book of the Principles and Practice of Medicine. By the late CHARLES HILTON-FAGGE, M.D., F.R.C.P.; Physician to, and Lecturer on Pathology in, Guy's Hospital; Examiner in Medicine in the University of London; and PHILIP HENRY PYE-SMITH, M.D., F.R.S.; Fellow of the Royal College of Physicians; Physician to, and Lecturer on Medicine in, Guy's Hospital. Third Edition, 511

3. Atlas of Clinical Medicine. By BYROM BRAMWELL, M.D., F.R.C.P., Edin.; F.R.S., Edin.; Assistant Physician to the Edinburgh Royal Infirmary, &c. Volume I. Part IV., - - - - 513

4. Lectures on Diseases of the Digestive Organs. Vol. I. Lectures on Digestion. By DR. C. A. EWALD, Professor in the University, and Physician to the Augusta Hospital, Berlin. Translated from the latest German Edition, by ROBERT SAUNDBY, M.D., F.R.C.P., - 514

PAGE

5. The Action of Water on Lead: being an Inquiry into the Cause and Mode of the Action and its Prevention. By JOHN HENRY GARRETT, M.D.; Diplomate in Public Health, Durham and Cambridge, &c., - - - - - - - - 515

PART III.—SPECIAL REPORTS.

REPORT ON THE PROGRESS OF SURGERY. By R. GLASGOW PATTESON, M.B., Univ. Dubl.; Fellow and Member of the Court of Examiners, R.C.S.I.; Surgeon to St. Vincent's Hospital—(*continued*):—

4. Ligature and Excision of Internal Jugular Vein, - - 516
5. Enucleation in the Treatment of Goître, - - - 518
6. Treatment of Suppurative Cholecystitis, - - - 520
7. Surgical Treatment of Hepatic Abscess, - - - 521
8. Intermittent Hydronephrosis, - - - - - 523
9. Spinal Surgery, - - - - - - 525
10. Spasmodic Torticollis, - - - - - - 528
11. Tenotomy by a New Method, - - - - - 529
12. Tuberculosis of the Urinary Bladder, - - - - 529
13. Treatment of Tuberculosis of Bones and Joints, - - 532
14. Gastrostomy, - - - - - - - 534

PART IV.—MEDICAL MISCELLANY.

CLINICAL RECORDS:—

A Case of Protracted Enteric Fever. By R. J. KINKEAD, B.A., M.D., Univ. Dubl.; Professor of Obstetric Medicine and Lecturer in Forensic Medicine in Queen's College, Galway, - - 537

SANITARY AND METEOROLOGICAL NOTES. Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R.Met.Soc.; Diplomate in State Medicine and ex-Sch. of Trin. Coll. Dubl.:—

Vital Statistics for Four Weeks ending Saturday, April 23, 1892, 541
Meteorology—Abstract of Observations made at Dublin for Month of April, 1892, - - - - - - - 546

PERISCOPE:—

Errors in Health Reports, - - - - - 540
Presentation to Sir George Buchanan, F.R.S., - - - 551
Bacillus Lepræ, - - - - - - - 551
Laparotomy for Intestinal Perforation in Enteric Fever, - - 551
Hyperpyrexia in Acute Rheumatism, - - - - 551

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS:—

Therapeutical Novelties, - - - - - - 552

INDEX TO THE NINETY-THIRD VOLUME, - - - - 553

"LLOYD'S LEICESTER"

The manufacture of Soluble Pearl Coated Pills was first introduced into Leicester by Mr. T. HOWARD LLOYD (18 years partner in the firm of JOHN RICHARDSON & CO.), and they are now made with the most complete and modern machinery, ensuring accuracy and uniformity, by

T. HOWARD LLOYD & CO. HIGH STREET, **LEICESTER.**

Price Lists forwarded on application.

SOLUBLE PEARL COATED PILLS

GLYCERINUM PEPTICUM.

(FAIRCHILD.)

This Glycerine extract of the peptic ferment possesses every requisite of a concentrated solution of pepsin. It is highly active, uniform and stable, devoid of objectionable odour or taste, is freely miscible without precipitation or cloudiness with all proper menstrua or media, is notably free from all disagreeable qualities and characteristics of peptone solutions. It contains no alcohol or antiseptics other than glycerine of the purest quality.

Glycerine possesses peculiar value as a vehicle for pepsin, it being the only substance known which is at once both a powerful solvent and a preservative of the ferments of the gastric juice. For this reason, glycerine extracts of pepsin have been recommended and employed in experimental work by physiological chemists.

The properties and value of pepsin are so well known that the advantages of a pure glycerine extract of this ferment will be well understood by both pharmacists and physicians.

Glycerinum Pepticum (Fairchild) possesses every desiderata, both from a pharmaceutical and medicinal standpoint.

Twelve minims will be found equivalent in activity to one grain of the best pure pepsin in a dry form that is to be found in the market. It will be found, upon comparative test, of much greater strength than any fluid preparation of pepsin known.

It mixes freely, without precipitation or cloudiness, with all clear liquids with which pepsin is or should be employed.

Pharmacists will appreciate the facility with which the usual fluid preparations of pepsin may, by means of the Glycerinum Pepticum, be quickly and economically prepared, as there is no loss by filtration. It is agreeable to take, and may be mixed with pure water, wine, or any of the usual vehicles.

Glycerinum Pepticum supplied to the Medical Profession in 4-oz. bottles, at 1/10 each. Retail, 2/6 each.

BURROUGHS, WELLCOME, & CO., Snow Hill Buildings, London, E.C.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

JUNE 1, 1892.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XIX.—*Rhinoscleroma.*[a] By W. G. T. STORY, M.B.; Clinical Assistant in St. Mark's Ophthalmic Hospital, Dublin.

THE disease known as Rhinoscleroma was first described by Hebra in 1870. In the cases seen by him the nose and adjacent parts, more especially round the external orifices of the nose, were swollen and infiltrated and very hard to the touch, and it was owing to this feature that the name Rhinoscleroma was given to it by Hebra, who supposed that it was of a sarcomatous nature. Since then, however, numerous other cases have been seen and described in Austria, Russia, Germany, Italy, and in Central America; and it has been found that the nose is not always either the starting-point or the seat of the disease.

The usual course of the disease is as follows:—After a history of long-standing nasal catarrh, accompanied in some cases by a tendency to bleeding, a chronic hypertrophic inflammation of the mucous membrane is observed; this generally commences at the choanæ, and may spread thence towards the anterior nares, the lips and gums, causing all these parts to become swollen and hard, or may spread downwards to the soft palate, pillars of the fauces, pharynx and larynx.

The parts attacked become greatly swollen, darker in colour than the surrounding healthy mucous membrane, and very hard to the touch; after a time nodules, also very hard and some of

[a] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland, Friday, April 1, 1892.

them as large as a hazel nut, develop on the surface of the swelling, and on these or between them superficial loss of substance may occur, but deep ulceration is almost never seen. The swellings are not painful, but by their size may cause in the nose difficulty of breathing, loss of smell, and blocking of the Eustachian tubes, with consequent deafness and tinnitus; in the lips, mouth, and pharynx difficulties in mastication and deglutition, and in the larynx persistent cough, aphonia, and attacks of dyspnœa, which are the more frequent, as the swellings give off a very sticky secretion which tends to form plugs and crusts: this is the stage of infiltration; it is followed by one of cicatricial contraction, when the swellings disappear and are replaced by cicatricial tissue, at first also very hard but becoming later more fibrous and greatly inclined to contract. This contraction may also cause severe symptoms, more especially stenosis of the larynx and trachea; like the swellings, the cicatricial tissue is covered with smooth thickened epithelium. The conversion into cicatricial tissue commences in the parts first attacked, so that in an old case it is often found to have taken place in the more central parts, while fresh nodules of infiltration are still appearing at the periphery. The disease is very chronic in its course; it is generally seen in young adults, though cases have been observed in children and in old persons; except indirectly, it does not seem to affect the general health.

Medicinal treatment has been of no avail, and what would seem the most rational method of cure—that is to say, complete removal of the diseased tissues—is so difficult to carry out that I do not know that there has been any quite successful case published; the diseased tissue, though so hard, is surprisingly easy to cut, and the wounds made heal very readily; but it is very hard to get away all the diseased parts, and foci of infection are generally left from which the process may start afresh. Treatment is therefore, to a large extent, palliative: the most important complication—stenosis of the glottis or trachea—being treated by dilatation with bougies or by tracheotomy.

The pathological changes consist in an infiltration of the mucous and submucous tissues with small round cells and spindle cells; among these are to be found a number of large round cells, which have a blown-out appearance, and are named after the observer who first described them—the cells of Mikulicz; the papillæ are enlarged and the epithelium thickened. In old

diseased parts the small-celled infiltration is replaced by dense connective tissue, and the cells of Mikulicz are very scarce, but small masses of so-called hyalin material, very retentive of aniline stains, are to be found, and these are believed by most observers to be a degeneration product of the cells of Mikulicz.

In 1882 Frisch discovered that small bacilli were nearly always present in the cells of Mikulicz and also lying outside them; he was able to make cultivations of these bacilli, but his inoculation experiments were without result. Later, Cornil and Alvarez, and after them Paltauf, and v. Eiselsberg in Vienna, noticed that when stained in certain ways each bacillus might be seen to be surrounded by a capsule of what they supposed to be a colloid material—for instance, when carbol fuchsin was the stain used, the capsules were visible, but when Löffler's methylene blue was used the capsules were unstained, and the bacilli looked therefore much smaller. The bacilli are for the most part contained in the cells of Mikulicz; in these cells a nucleus may often be seen lying at the periphery, as if it had been pushed to one side by the contents of the cell. These bacilli were successfully cultivated in six cases of typical rhinoscleroma by Dr. Paltauf in 1885; the cases were typical of the disease as described by Hebra, as the nose and external nasal orifices were involved; drops of blood or exudation were taken from cuts made in the tumours with the usual precautions, and pure cultures were obtained on gelatine plates and tubes, on agar-agar and potato. On the plates they appeared, after a couple of days, as small round white colonies as large as the head of a pin, and in gelatine tubes in which "Stich-kulturen" were made they took the form of a nail—in fact, were typical "Nagel-kulturen;" they did not liquefy the gelatine. On agar-agar the colonies appeared more rapidly as white translucent masses, about 5 mm. in breadth, and on potato they appeared as a cream-like layer, which spread gradually from the point of inoculation. Under the microscope the cultures were found to be made up of short rod-like bacilli with capsules which could be stained, and of cocci, chiefly diplococci, also with capsules. These micro-organisms resembled therefore exactly those seen in the tissues. They resembled also in a remarkable way, both in their method of growth and in their appearance, the bacilli which had been described by Friedländer as the cause of acute croupous pneumonia.

With these pure cultures inoculation experiments were made, and control inoculations were made with Friedländer's bacillus. The results in each case were very similar—that is to say, that in mice and guinea-pigs inflammation of the pleura and death could be caused, and also local abscesses in the subcutaneous and muscular tissues, but no process resembling rhinoscleroma in man. The rhinoscleroma bacilli were markedly less virulent than Friedländer's bacillus. Rabbits were not affected by either bacillus.

Last year Drs. Paltauf and v. Eiselsberg published 15 more cases in which they have successfully made pure cultures of the bacilli; this makes 42 published cases in which this has been done, and this large number—considering the small number of cases of the disease observed, that in all the cases tried cultivations could be made, and that the bacillus could be always found in hardened sections—may be considered conclusive evidence that the micro-organism is the cause of the disease.

Of these last 15 cases only one was a typical case of the rhinoscleroma of Hebra—that is to say, with hardening of the external parts of the nose, infiltration of the alæ nasi, and swellings of the external nasal orifices without ulceration.

In 2 of the cases there was ulceration, which is rare in rhinoscleroma, and in both these it was believed that the ulceration was, if not caused, at least rendered worse by the antisyphilitic treatment, both local and constitutional, to which, owing to mistaken diagnosis, the patients were subjected.

In 5 of the cases the disease never spread to the external orifices of the nose, though the nasal mucous membrane was attacked.

In 7 cases the disease was primary in the larynx or trachea, appearing there as the chorditis vocalis inferior hypertrophica described by Gerhardt; in 3 of these, bacilli in the cells of Mikulicz were found; in the other 4 and in 5 other cases where the larynx was involved, no tissue could be got for microscopical examination, though the clinical observations left no doubt as to the nature of the disease.

In 3 cases of suspected rhinoscleroma cultivation experiments gave a negative result, which was confirmed by events—the tumours disappearing under antisyphilitic treatment in one case, and in the others turning out to be of a tubercular and of a carcinomatous nature respectively. Dr. Paltauf concludes, therefore, that cultivation experiments are of great diagnostic value, and in doubtful cases conclusive for or against the nature of the disease.

As to the relationship of the bacillus of rhinoscleroma to that described by Friedländer as the bacillus of croupous pneumonia, it was found that there were points of difference in the cultures:—

1. In tubes containing 1 per cent. of grape sugar, Friedländer's bacillus caused fermentation and complete disappearance of the sugar in 12 days, whereas the bacillus of rhinoscleroma only caused 66 per cent. of the sugar to disappear.

2. Friedländer's bacillus will grow in an acid medium; the other will not.

3. Friedländer's bacillus will coagulate milk, whereas that of rhinoscleroma will not do so.

The bacilli, therefore, though closely allied, are not the same.

I should mention that Dr. Paltauf follows v. Ganghofer in giving up the term rhinoscleroma, as the disease has been shown not to be confined to the nose, and uses instead the expression scleroma of the throat, larynx or nose.

The sections on the table were given to me in Dr. Paltauf's laboratory. The first was stained in hæmotoxylin (Grenacher's), and in it the capsules surrounding the bacilli are so deeply stained that they are not transparent, and the bacilli therefore look large and are easily seen lying inside the large spheroidal cells of Mikulicz.

Under the second microscope is a section from the same specimen stained in carbol fuchsin. In this section the bacilli lying also in the cells of Mikulicz can be seen, but they look smaller: the reason of this is that the capsule is so faintly stained as to be almost invisible, and the small bacilli are seen lying inside it.

These large bacilli holding cells are quite typical of the disease; they are not, as far as I know, seen in any other condition.

ART. XX.—*On Epistaxis and the Hæmorrhoidal Flux: their Pathogenic Unity and Identity of Cure.*[a] By ALEXANDER HARKIN, M.D., F.R.C.S.; Consulting Physician, Mater Infirmorum Hospital, Belfast; Membre de la Société Française d'Hygiéne, Paris.

To the ordinary observer it may not appear that there exists any ætiological or pathological affinity between these two prominent examples of the hæmorrhagic habit; yet, on closer inquiry, it will be found that they are intimately allied in pathogenic origin, in

[a] Read before the Ulster Medical Society on Wednesday, May 4, 1892.

their general behaviour, and in the measures necessary for their treatment and effectual cure. Often, on the suppression of an habitual discharge, one or other of these emunctories acts vicariously, thus supplying the deficiency; and it is not at all uncommon for the pituitary membrane at the upper end of the alimentary canal to show its sympathy, by a sudden outburst of blood, when from some cause, whether operative procedure or otherwise, the ordinary hæmorrhoidal flux has been suspended. Epistaxis is a malady of every age and class, most incident to youth, at the period of puberty, and in adolescence—less so in advancing age. During the period of growth and development the cavernous bodies and the nasal erectile tissue are in a state of turgescence, requiring but slight injury to provoke a traumatic attack; and in adolescence, the period of life when the passions have their sway, and fear and joy and anger and grief and sexual excitement play their part, their onset is often marked by spontaneous hæmorrhage from the nose. I was myself cognisant of the case of a Dublin physician of eminence, who felt so acutely at being unjustly reproached by his son, that the blood spouted instantly from his nose to a great distance. Morell Mackenzie justly remarks that the influence of violent emotion in inducing nasal hæmorrhage did not escape the observation of Dickens, who in his story, "Our Mutual Friend," relates that Bradley Headstone, after his murderous attack on Eugene Wrayburne, when under the influence of terror, suffered from frequent discharge from the nostrils. Dr. Girod, of Clement Ferrand, relates the case of a young man under age, his companion in travel, who suffered from intractable and daily epistaxis; suspecting the cause, and gaining the young man's confidence, he confessed that it was due to daily malpractices. Acting on his advice, the young man relinquished the habit, and the hæmorrhage ceased; and Hippocrates, in his *De Morbis Vulgaribus*, writes: "Timochari hieme distillatione in nares præcipio vexata post veneris usum cuncta resiccata sunt."

Epistaxis also sometimes presents itself as a symptom or concomitant of cardiac and hepatic, of renal and febrile affections, and of acute rheumatism with pronounced endocarditis or hypertrophy of the left ventricle. It is seldom that the malady can be regarded as of idiopathic origin, the outbreak being generally indicative of constitutional disorder and disturbance of the physiological equilibrium of the blood-current; often, after the successful suppression of the hæmorrhage, should the systemic cause be overlooked, the

periodical return of the flux frequently occurs. While Morell Mackenzie attributes the frequency of nasal hæmorrhage in growing youths to plethora, Germain Sée, on the contrary, charges its inroads to anæmia, and censures parents and physicians for not recognising the condition as indicative of general debility. Possibly first attacks may be due to a hyperæmic condition of the blood, their frequent repetition, by draining the system of its normal amount of fibrin and red corpuscles, may induce an anæmic change; in this case, the passive hæmorrhage from the delicate lining of the nostrils shows an absence of the buffy coat, imperfect coagulation, and a soft clot, with often a diseased and impaired texture of the capillary vessels in the Schneiderian membrane. When, however, the nasal discharge is of an active character, the blood is surcharged with red globules and fibrin in increased proportion.

As to the ætiology and pathology of epistaxis, the result of my observation and experience leads me to attribute its causation, in the first instance, to functional and often to structural disease of the liver, the hæmorrhagic diathesis being a dyscrasia—a secondary affection due to chronic hepatic derangement, and this theory should not appear unreasonable if we take into account the *rôle* of the liver in the constitution and distribution of the blood, its metabolic activity, its power of transforming hæmoglobin into bile pigment, its capacity for storing up glucose under the form of glycogen to pour into the blood when it is needed, and its double supply of blood through the hepatic artery and portal vein; the proportion of the vital fluid constantly flowing through the liver is fully one-fourth of the whole; when also we remember that, as the result of heterogenesis, we owe the existence of lithic acid and the glycosuric dyscrasias, it is not unreasonable to attribute to the same organ the formation of the deteriorated, depraved, and hyperinotic blood of the anæmic subject of epistaxis.

In support of my theory that hæmorrhagic discharges from the upper end of the alimentary canal, the lips, and the nose, are as evidently due to hepatic congestion as those from the rectum, I am enabled to quote the authority of an eminent pathologist—the late Dr. Moxon. In one of his lectures on Analytical Pathology, delivered in Guy's Hospital,[a] he states that "it is, indeed, very surprising to find a very free, and even a fatal, hæmorrhage from the stomach, while the mucous membrane, from which the blood (as in epistaxis) must have come, is entire, yet, no doubt, this

[a] Medical Times and Gazette, July 11, 1870. Page 58.

sometimes occurs. I have met with a case where cirrhosis of the liver led to total obstruction of the portal vein by *ante-mortem* coagulation in it, and in consequence of this obstruction a varicose œsophageal vein ruptured close to the cardiac origin of the stomach; a small hole was found leading into the vein channels; the patient had bled to death from this. The occurrence was equivalent to the rupture of *œsophageal piles*, and it is an interesting link connecting the common anal hæmorrhoids that arise from hepatic obstruction with the dilated venules on the cheeks and in the mouth, that we recognise as signs of obstructed hepatic circulation. *These venules are indeed no other than facial hæmorrhoids.*

Michael Foster writes:[a]—"Since in the heart and great blood-vessels the blood is simply *in transitu*, without undergoing any great changes, it follows that the changes which take place in passing through the liver and skeletal muscles far exceed those which take place in the rest of the body." And Aitken:[b]—"Numerous instances of the hæmorrhagic diathesis have pointed to a definite organ as its source—viz., either a morbid condition of the spleen or liver; and in case of leukæmia, usually toward the close of life, a genuine hæmorrhagic diathesis is developed." Immermann, too, treating of the general diseases of nutrition, says:[c] "If a disorder of nutrition, looked at broadly, depends on a disturbance of the mutual relations between the blood and the tissues, it necessarily follows that it may originate either in an abnormal state of the blood or the tissues. Hence the pathogeny of the general disorders of nutrition suggests the possibility of their arising in different ways, and regards any one-sided theory—*e.g.*, that they are a blood disease, as, *à priori*, unjustifiable. For, since the blood, besides supplying the tissues with pabulum, also receives from them the products of cellular metamorphosis, it is always possible that owing to a morbid state of all, or a majority of the tissues a secondary heterotomy or dyscrasy of the blood may be induced, as in diabetes mellitus. The anæmic condition may possibly depend on a state of the tissue elements in which the desire for pabulum is relatively good, when accompanied with an inadequate energy of sanguification; the hyperæmic, on a weak acquisitive power in the tissues, while the power of renewal of the constituents of the blood is unimpaired."

[a] "Physiology." Page 35.
[b] Aitken. Vol. II., page 78.
[c] Von Ziemssen. Vol. XVI., pages 257-9.

My contention, then, is that the starting-point in the constitutional disorder which takes the form of anæmia or hyperæmia, and of which epistaxis is a frequent result, is as clearly due to hepatic disorder as diabetes mellitus itself—viz, to an abnormal condition of the tissue elements or cells in the liver, secondarily affecting the blood and general constitution. With this theory of causation, treatment would naturally proceed on the lines of improving the constituents of the blood, and of restoring the health of the liver, whether functionally or organically defective. In accordance with my recorded experience,[a] the first indication would be most readily met by the free administration of chlorate of potassium alone, or in combination with iron; the second, by counter-irritation over the region of the liver, a large blister being practically the most convenient form; further, as chlorate of potassium is possessed of remarkable hæmostatic properties, I am satisfied that it is not solely through its immediate action on the molecular elements of the blood, but also by its direct operation on the disordered condition of the liver, that it controls and limits the congestive and other lesions of this important organ. That potassium chlorate has the power of yielding some life-giving element to the blood in cachectic conditions, and that its presence in the blood acts as a powerful stimulant to cell-growth, cannot be questioned. It is at the same time difficult to explain its *modus operandi*, whether by the separate action of its important elements, or, in a topical manner, *per se*.

Bence Jones says that—"By dialysis all crystallised bodies act as directly on the textures as on the blood; they act according to their chemical power when they enter the textures, and according to the chemical and physical properties of which the textures are composed." Besides, according to Sir Charles Cameron, "drugs produce powerful catalytic effects without undergoing themselves any chemical changes." But, whether through the agency of its separate elements by dialysis, or catalytic action, the clinical facts remain, that the administration of potassium chlorate produces in the human subject the identical result claimed for oxygen by Beddoes, Thornton, Birch, and Hill, that it energises to a considerable extent the nutritive functions, increases the appetite, slightly elevates the temperature, stimulates the cardiac movement, and augments the

[a] British Medical Journal, October 30, 1880. N.B.—I intentionally pass over topical treatment during an attack, as there cannot be any doubt of its necessity.

body weight, increases the number and stimulates the organic activity of the red globules. The combination of topical and internal remedies having proved so satisfactory in the suppression of hæmorrhage from the bowels dependent on bleeding piles, and success having often attended their separate action, through their curative influence on the congested liver, I became convinced that equally satisfactory results would follow in cases of nasal hæmorrhage by the adoption of similar measures. I had for a long time recognised the fact, that in the great majority of persons suffering from congestions, cirrhoses or other hepatic diseases, if free from anal discharges, they were subject to desultory bleeding from the nose, and in most instances from the right nostril. Extensive clinical experience tallied completely with my theory of causation, and confirmed its correctness, and has enabled me to claim for counter-irritation over the liver the merit of a speedy and effectual remedy for this troublesome disorder. Hæmorrhage from the right nostril has always been regarded by me as a sign of hepatic disease, and even Galen[a] had long since referred to this peculiarity as a guide in treatment of epistaxis. "Cupping glasses," he says, "applied to the hypochondrium arrest nasal hæmorrhage. When the blood flows from the right nostril they should be applied over the liver; from the left, then over the spleen; when from both sides, then the cupping glasses should be applied over both sides."

In a paper[b] read at the Cork meeting of the British Medical Association on the subject of the hæmorrhagic diathesis, I related the particulars of a case of epistaxis hæmophilia, in a youth of eighteen, engaged in a mill near Belfast, who suffered so much from a continuous dropping of blood on the flax he was manipulating, that he feared he would have to retire from the business. His family history is remarkable, his father having been subject to many severe attacks of epistaxis—sometimes persisting, despite of treatment, for a month at a time; another member of the family suffered similarly from the extraction of a tooth, a wound by shaving giving rise to most troublesome bleeding. I prescribed an ounce of chlorate of potassium in a pint of water, with the addition of one drachm of muriated tincture of iron—a fluid ounce for a dose—thrice daily. Before the mixture was finished the case was complete and permanent; this dates from June, 1874.

[a] Gazette Hebdomadaire. 1881. P. 145 du feuilleton.

[b] British Medical Journal, 1880, October 30.

In the *Lancet*, October 30, 1886, I published the following notes of four cases:—

Case I.—On May 13, 1885, I was sent for, to visit J. B., aged eighteen, a counter hand in a spirit store, subject to free bleeding from the right nostril for many weeks, to severe headache, and constipated bowels. No history of piles. On examination I found the liver tender on pressure and somewhat enlarged. I then applied the liquor epispasticus freely over the hepatic region, telling the young man that after five hours the bleeding would permanently cease, and ordered some cholagogue medicine. As I predicted, the hæmorrhage ceased, without any return up to the present date.

Case II.—On same day a young man, apprenticed to a chemist, came, accompanied by his father, to me. He had suffered very much from indigestion and vertigo, and hæmorrhage from right nostril for many days. I had formerly treated his father for congestion of the liver, due to excessive drinking. On examining the patient I discovered an enlarged liver with congested cutaneous veins traversing the right hypochondriac region. I applied the fluid blister with the usual result—an immediate cessation of the epistaxis. The young man has since emigrated, but up to the day of his departure, six months after, there had been no reappearance of the blood.

Case III.—On May 25th, 1885, J. S., an indoor servant, sought my advice. He had been suffering for the previous six weeks from profuse epistaxis from the left nostril. At first it appeared at regular intervals, but latterly it observed no limit, coming on six or seven times every day. He had a large and torpid liver, and many of the subjective signs of the disease—disturbed sleep, headache, irritable temper, borborygmi, hardened stools, depressed spirits, unwillingness to rise in the morning, and drowsiness in the day. I then applied the counter-irritant over the seat of the disease; the epistaxis yielded at once, as well as the other objective and subjective symptoms. The cure has been for so far a permanent one.

Case IV.—While paying my morning visit to a straw lodge—an improvised barrack for police during the riots of 1876—accompanied by one of the officers, I found one of the men in bed with a handkerchief at his nose, saturated with blood, which had been flowing for the greater part of the previous night. On satisfying myself of the causal factor in the attack, I painted him over the liver with the epispastic fluid, prescribing no other remedy but rest in bed. On our revisiting the man next day, he informed us that from the moment that the blister began to pain him the hæmorrhage declined, and shortly after ceased altogether.

Case V.—*Vicarious Bleeding from the Nose and Under-lip.*—Mrs. M., aged thirty-eight years, the wife of a sergeant in the Royal Irish Constabulary, mother of six children, called on me early in March, 1885. Before marriage she had suffered from hæmorrhoids, and during her first and subsequent pregnancies from hepatic congestion and occasional hæmorrhage from the bowels, which often gave me some anxiety on her account. On this occasion she presented every sign of anæmia and debility—blanched cheeks and lips, sunken features, compressible and feeble pulse, undue palpitation of the heart on the slightest exertion, continuous headache, and frequent vertigo. She attributed her exhaustion to profuse bleeding from the left under-lip, occurring at every meal and generally lasting for ten minutes each time. On examination I discovered a slight abrasion at the junction of the epidermis with the lining membrane of the left lip, about half the size of a threepenny coin, from which the blood flowed freely. Mrs. M. had removed from my neighbourhood two years previously; and as the hæmorrhoidal flux again became troublesome, by the advice of an experienced physician she entered the Royal Hospital, Belfast, in February, 1883, where the offending growths were soon deligated by one of the attending surgeons of that institution.

After returning home in April her relief was of short duration, irritation about the anus occurring from time to time, and occasionally a slight discharge of blood from the nostrils. But in the June following her left under-lip became painful, and blood began to ooze from it, once or twice in the week; the intervals then became shorter, the drain occurring every day, then at every meal, or when by accident the lip was hurt.

Having from previous experience acquired a thorough knowledge of the patient's constitution and requirements, I did not hesitate but immediately ordered the application of a blister, 8 inches by 4, for eight hours over the region of the liver, to be followed by cotton-wool dressing. On my visit next day I was informed that from the moment free vesication was established all labial hæmorrhage had ceased. I then prescribed the use of chlorate of potassium and tincture of iron in liberal doses; there was a speedy return of health, her colour and bodily strength soon reappeared, the headache and vertigo troubled her no more. She occasionally complained of pain at the delicate lip; and with one exception since that date, when a slight bleeding appeared, which, without consulting me, she speedily arrested by a blister over the liver, she has not had any recurrence of her trouble.

I shall conclude with two cases of recent occurrence:—

Case VI.—Miss N., a lady of middle age, residing in the country, sent for me in March, 1891, for a severe attack of epistaxis, recurring at

intervals and causing anxiety on account of her distance from medical advice. Recognising in her case an enlarged and torpid liver, greatly due to want of exercise, and to good living, I applied the fluid blister over the affected organ, and was informed next day that all hæmorrhage had ceased. I recommended some active purgation, and more moderation in food, and there has not been any return of the malady.

Case VII.—Miss L. D., aged twenty-six, a worker in a wareroom, necessitating a sitting posture and head bent over her work—a branch of the linen trade—called on me on 4th April, 1891, complaining of frequent attacks of nasal hæmorrhage, sometimes lasting for a week and requiring her abstention from work for that time; the disease had continued for three years, and she had consulted many physicians and specialists, having among other remedies been using Blaud's pills for many months without relief. I applied the blister as usual, recommending the hæmostatic of iron and potassium chlorate. She had an immediate recovery, and has been able to attend her place of business with regularity, except that on 9th December, being prostrated with influenza for a few days, her nose bled for about three minutes, requiring no special treatment.

It is, probably, worthy of note that almost coincident with my researches on the nature and treatment of hæmorrhagic diseases a learned Academician and eminent surgeon, M. Verneuil, of La Pitié, Paris, was perseveringly working out a similar problem. He arrived with me at the same conclusion—viz., that in cases of nasal and anal hæmorrhage the liver was primarily in fault, and that our curative efforts should be directed in the first place to it. My cases of anal and nasal hæmorrhage, as published in the *British Medical Journal*, occurred in 1867 and 1874; and M. Verneuil's Memoirs in 1870 and 1875. Further, the first five cases of epistaxis which I have just read, and which appeared in the *Lancet* in Oct., 1886, were followed by a paper communicated to the Academie de Médecine, Paris, six months after—April, 1887—M. Verneuil giving an account of three remarkable cases of epistaxis cured like mine by counter-irritants, or, as he called it, revulsives over the liver. M. Verneuil politely sent me a copy, from which, in an abbreviated form, I give the three cases:—

Case 1.—A man, aged fifty-nine, of robust frame, given to alcoholic excess, resulting in a marked diminution of the size of the liver, subject to intermittent attacks of epistaxis, which plugging the nostrils, sulphate of quinine, ergotin, and digitalis failed to arrest. Recognising a coming cirrhosis of the liver, and

a causal relation between this morbid condition and the hæmorrhage, M. Verneuil directed the application of a blister to the right hypochondrium, putting an end to further medication. The hæmorrhage was definitely arrested by this means. Case 2.—Traumatic epistaxis—A groom, aged forty-five years, of sober habits, but much subject since his fifth year to attacks of epistaxis, received an injury from the foot of a horse upon his face, followed immediately by profuse and continuous bleeding, which resisted plugging of the nasal fossa and all internal medication. On examination, all the viscera except the liver proved to be sound; the latter was notably diminished in volume. The suspension of all internal remedies and the application of a blister over the right hypochondrium arrested the epistaxis at once. Case 3.—Intermittent epistaxis in a patient formerly the subject of nephritis, at present suffering from an affection of the heart and congested liver; failure of plugging, ergotin and the water of Lechelle, and perchloride of iron; immediate cure by the simultaneous employment of sulphate of quinine and a large blister over the region of the liver.

M. Verneuil concludes from these facts—1st. Latent and even non-malignant affections of the liver may provoke and be the occasion of troublesome epistaxis; 2nd. Relief procured by the aid of a large blister over the right hypochondrium, which appears to be the best means of curing hæmorrhages of this nature. M. Verneuil concluded his paper in the following terms:—"The maladies of the liver constitute a serious complication for operations, and when one recognises clearly their existence in a patient the wisest course is at once to return his bistoury to his pocket."

While admitting the importance of the clinical facts the Academicians preferred not to commit themselves to any therapeutic theory; they did not, as a scientific body, admit the principle of revulsives, M. Dujardin-Beaumetz declaring that was too extensive a subject to enter on—in fact, since the time when M. Malgaigne some fifty years ago commenced a crusade against revulsives, and particularly blisters, in the Academie de Médecine this subject has continued to prove a bone of contention. M. Colin could not understand why blisters were preferably applied over the liver, as there was no vascular connection between the skin and that organ; he considered that the heart was at fault, and that epistaxis was provoked by exaggeration of the vascular system that ruptured the delicate vessels of the pituitary membrane in the nose.

M. Verneuil, in reply, said it was not necessary to have any vascular connection between the organ and the part to which blisters were applied, and that it was the nervous system through the existence of reflexogene zones that determined the point of application. Finally, he said that it was not his desire to formulate any therapeutic ætiology, but simply to state interesting facts.

The ideas generally entertained at present in this country as to the ætiology of bleeding piles afford a typical example of an error to which modern physicians are occasionally liable—viz., that of mistaking secondary and accidental symptoms for the primary disease, and of the failure to recognise the connection that exists between these symptoms and certain morbid processes in important organs. Proceeding on these lines many physicians, not recognising a disordered liver as the *fons et origo* of the anal hæmorrhage, and not directing their energies to its improvement, incontinently relegate their patient to the operating surgeon, who, without hesitation or remorse, proceeds to deligate and destroy by his instruments of precision the safety valve provided by nature for the relief of the suffering organ. Sometimes, however, as in the instance recorded in Case V., the *vis medicatrix* changes the venue from the south to the north pole, and thus endeavours to baulk the surgeon's beneficent intentions by establishing a counter-current from the upper end of the alimentary canal. Happily for the patient it is not deemed necessary to repeat the same heroic remedy when nose or lip performs the vicarious duty.

I have always regarded the hæmorrhoidal flux as well as hæmorrhage from the nose as the outcome of the hæmorrhagic diathesis, itself the direct product of the hepatic cells in a state of hyperactivity, and, as a consequence, in endeavouring to restrain these inordinate discharges I have prescribed those remedies whose powers I have tested in controlling the undue activity of all the conglomerate glands, the liver included, my chief reliance being upon chlorate of potassium. When the case was urgent I have also invoked the aid of vesication, which has never failed me by its counter-irritant and derivative action in permanently suppressing either form of hæmorrhage. My experience dates back to 1867, and my first published case, which I read at the Cork meeting of the British Medical Association, appeared in the Journal of October 30th, 1880, as follows:—

Case I.—J. C., a member of the Royal Irish Constabulary, after returning from duty at night from the Music Hall, found one of his

boots full of blood, which he traced to the rectum. I saw him next day (December 19, 1867), and directed his removal to the Royal Hospital. I had not on examination discovered any sign of external hæmorrhoids. He remained in hospital till the 14th February following without any benefit, and then returned to barracks. I then prescribed rest in bed and chlorate of potassium in the proportion of one ounce of the salt to a pint of water, one fluid ounce three times a day. After the first day he began to improve, and at the end of the third day every trace of the disease had disappeared.

Case II.—Mrs. B., mother of three children, sent for me in April, 1875. When I arrived she was bleeding profusely from internal piles; had been ill for some days, and the drain had weakened her to an extreme degree. After prescribing absolute rest, I ordered a large blister to be immediately applied over the region of the liver, and my favourite hæmostatic—solution of chlorate of potassium and tincture of iron. This was done, and improvement followed at once. Next day she was free from all hæmorrhage. She afterwards, on the death of her husband, became a trained nurse in the Royal Hospital, and was never known to complain in a like manner.

Case III.—Mrs. M'D., aged thirty-six years, mother of six children, sent for me on March 8, 1886. I found her in bed, pallid and exhausted from a profuse discharge of blood from the rectum which had continued for several days. The blood accompanied every evacuation, sometimes to the amount of three or four ounces. On examination I found a fringe of external piles surrounding the anus, and inside the sphincter a number of knotty tubercles, from one of which arterial blood flowed freely. In this, as in the former case, I immediately applied a blister over the hepatic region, and ordered, as an adjuvant, a mixture of tincture of perchloride of iron and chlorate of potassium in solution. The relief was immediate, and the patient soon recovered her natural colour and strength. At the end of a fortnight, however, I was again sent for, as the bleeding had returned as freely as ever. The relapse was due to the patient having undergone great fatigue the previous day while assisting her husband in business. As her friends had now become anxious I requested Dr. Walton Browne to see her with me. He agreed with me in continuing the hæmostatic mixture, having, in addition, a sedative enema at intervals. These remedies only gave her partial relief, and, at the request of the patient, I reapplied the blister. The remedy was again successful; all bleeding ceased, and has not reappeared up to the present date.

In the leading article of the *Bulletin Général de Thérapeutique*, Paris, of July 30, 1888, M. le Docteur Petit[a] writes as follows:—

[a] Du Traitement du Hæmorrhages par le Revulsion sur la region hépatique.

"The *rôle* of diseases of the liver in the pathogeny of hæmorrhages is admitted by almost all the world since the memoir of Monneret in 1853 upon spontaneous hæmorrhages, and those of M. Verneuil in 1870 and 1875 upon traumatic hæmorrhages. Starting from these data it occurred to M. Verneuil that it would be judicious in certain intractable hæmorrhages to have recourse to revulsive measures in the hepatic region; that is to say, to treat the lesions of the liver as the exciting cause of the hæmorrhages. The most common of these spontaneous hæmorrhages appeared to be the hæmorrhoidal flux and epistaxis, and it was against the first of these that M. Verneuil in 1874 attempted revulsion over the liver. Moreover, at his request, one of his house surgeons, M. Duret,[a] in order to illustrate the *rôle* which affections of the liver played in the pathology of hæmorrhoids, demonstrated by several accurate dissections the anastomoses of the originating venules of the portal vein with the hæmorrhoidal veins. In the same year, 1885, M. Duret published in the *Progrès Médical* a clinique of M. Verneuil, giving three cases in which the relation between an affection of the liver and the hæmorrhoidal flux was abundantly evidenced.

Cases 1, 2, 3.—In a clinical lecture delivered in 1875[b] at La Pitié, M. Verneuil detailed the history of a patient suffering from profound anæmia, caused by a hæmorrhoidal flux of twenty years' standing, and recurring each time he visited the closet. He paid particular attention to the state of the liver, which was considerably increased in size; the spleen, too, showed an equal enlargement. Without deciding whether or not the hypertrophy of the liver had been the exciting cause or the consequence of the hæmorrhoids, M. Verneuil clearly established the connection between this affection of the liver and the hæmorrhoids. The same relation existed between the other two patients referred to in the lecture. One of them presented an enormous hypertrophy of the liver and the spleen, and voluminous hæmorrhoids. Since coming under his care he had administered a number of cold douches over the region of the liver and spleen, and he could testify to the great diminution of both organs; as for the hæmorrhoids

[a] Duret. Sur la disposition des veines du rectum et de l'anus et sur quelques anastomoses peu connues du système port. Le Progrès Médical. 1877. P. 304. Recherches sur la pathogenie des hemorrhoides. Arch. gén. de méd. 1886. 7° Serie 1. V. P. 191.

[b] Published by M. Duret in Le Progrès Médical. May 15. P. 261.

they had completely disappeared. The influence of revulsion by means of cold douches upon the affection of the liver and upon the hæmorrhoids was most remarkable in the second patient, enfeebled by numerous discharges of blood flowing from voluminous hæmorrhoids. He was in a state of profound anæmia, and showed an enormous liver. M. Verneuil, who had intended to operate upon him, determined first to reduce the hypertrophy of the liver. He advised hydrotherapy, which, after six months, proved thoroughly successful in lessening the size of the liver and in putting an end to the hæmorrhage. The salutary influence of revulsion in this case established clearly the relation between the affection of the liver and also the cure without any operation on the hæmorrhoids. Since that time M. Verneuil has completely abandoned the use of bloody operations in the treatment of hæmorrhoids. He has exclusively adopted dilatation by force (rupture of the sphincter) with the aid of interstitial cauterisation by the thermo-cautery when the hæmorrhoids are very numerous or very vascular. The application of compresses saturated with phenic water and some days of repose suffice to complete the cure.

M. Petit concludes thus:—"The subjects of chronic hepatic affections are liable to many spontaneous hæmorrhages, medical or surgical. A large number of facts having demonstrated that there exists a direct relation between spontaneous hæmorrhages and chronic affections of the liver, it seems to be a logical conclusion to treat the hæmorrhage by revulsion over the region of the liver, which usually proves most successful. When, then, we are called to a patient attacked by spontaneous hæmorrhage the indication is to examine the state of the liver, and if this organ prove to be in an abnormal condition then to apply a blister to the region occupied by it."

Such is a slight sketch of the teaching of the eminent surgeon to La Pitié and other Gallican authorities. That it has not as yet been accepted in England is undoubtedly true; and although there is not another organ of the body whose congestions and hypertrophies are more amenable to treatment, yet the minds of the leading medical authorities appear only anxious to excel in the invention of the most perfect instrument of mutilation, and to decide whether the clamp, the ligature, or the knife, or the actual cautery is best adapted for the destruction of the safety-valves provided by nature for the relief of an overburdened viscus at its lowermost outlet, the hæmorrhoidal veins.

If a recent discussion at the Medical Society of London [a] may be accepted as voicing the opinion of the metropolitan profession, it would appear that the *rôle* of the liver in the causation of piles is ignored, and that the favourite remedy for a medical ailment is the mechanical treatment of aggressive surgery.

When one compares the bald and unsupported opinions of the speakers, with the exception of the author of the paper, who gave a qualified assent to the causal influence of the liver in this discussion supremely anxious to "*exonerate*" the liver from any part except occasional in the causation of piles, with the outspoken dictum of Astley Cooper delivered sixty years ago in old St. Thomas's, he would feel a difficulty in complimenting them on the progress of medical science in the end of the 19th century. In his lecture on Piles,[b] after mentioning costiveness and diarrhœa as often a cause of this complaint, Sir Astley continues—"It very often arises from disease of the liver, and congestion of the veins in the intestinal canal. The difficulty of transmitting the blood through the vena portæ occasions a congestion in the hæmorrhoidal veins, and obstructed secretions in the intestinal canal lead to the same effect."

It may be asked, What is the *modus operandi* of the blister in these hæmorrhagic ailments? The blister in these cases acts—first, as a counter-irritant by causing an irritation of the surface and of the terminal branches of the cutaneous nerves, which, through the influence of the trophic nerves, affects the calibre of the arterioles, and thus controls the congestion and hypertrophy; but the vesicant acts also as a powerful depletive by abstracting from the circulation in the neighbourhood of the diseased organ a quantity of white blood, highly albuminous and coagulable on the application of moderate heat. Doubtless, wet-cupping in the hypochondriac region or free leeching from the anus would also rapidly react on the liver, and perhaps as readily relieve present congestion; but, irrespective of the greater inconvenience of such remedies, there is a potent objection to their use—viz., that they must abstract from the system, already too anæmic, a quantity of red globules and fibrin, confessedly present in insufficient proportion; while the blister is as powerfully depletive, leaving untouched the hæmoglobin, and not increasing the hyperinotic condition.

In conclusion, although professional men are often chargeable

[a] Lauder Brunton. On the Causation and Treatment of Piles.
[b] Lectures on Surgery. 4th edition. Page 420.

with marked reluctance in admitting the relation between cause and effect, between remedy and cure, yet from the uniform sequence of events that attends the revulsive method of treatment in epistaxis and the hæmorrhoidal flux, I think I may safely claim for it the title of a reliable remedy. In the words of Peter Latham :[a] "The treatment of diseases is in fact a part of their pathology. What they can bear, the kind and strength of the remedy, and the changes which follow its application, are among the surest tests of their nature and tendency."

ART. XXI.—*Some Modern Methods of Sewage Treatment.*[b] By D. EDGAR FLINN, D.P.H., F.R.C.S.I., M.R.C.P.I.; Examiner in State Medicine, Royal Colleges of Physicians' and Surgeons' Conjoint Examining Board; Surgeon, St. Michael's Hospital, Kingstown; formerly Med. Officer of Health, E. Staffordshire.

Dr. Alfred Carpenter has trulysaid that—"It is the object of the sanitarian to bring about conditions which diminish the frequency of early death, which assist to remove bodily pain from the list of human grievances, and to pave the way for that time when every person born into the world will enjoy his birthright, without having it curtailed by the acts of other people."

THE object I had in view in the drafting of this paper was to draw the attention of this Section to the benefits derivable from the most recent methods of sewage disposal. "The sewage problem," as it has been aptly termed, has passed through many stages during the past twenty years or more, but it is only within the last few years that scientific knowledge has sufficiently advanced to bring this vexed question within the possibility of a final and successful solution. Sanitarians have devoted themselves assiduously to grapple with the difficulties that beset their way in the disposal of the sewage of cities and towns, and if they had not, to a great extent, surmounted these difficulties, the condition of the large centres of population would long ere this have become intolerable. Further, in regard to the progress that has been made in sanitary science, the reign of Queen Victoria will ever stand prominently forth as a most important epoch, as at the time of her accession the sanitary condition of the people was as bad as bad could be.

[a] Author's preface, page 38.

[b] Read before the Section of State Medicine of the Royal Academy of Medicine in Ireland, Friday, May 6th.

There has been a rapid advancement in the question of sewage treatment during the last ten years, and I opine that we have not yet come to a finality in this regard. The enforcement of the provisions of the Rivers Pollution Prevention Act of 1876, has become much more stringent, and effluents must attain a much higher standard of purity than heretofore. Previous to 1876 sewage matter and refuse from manufactories were discharged into rivers and streams, and the result was a wholesale pollution of the watercourses throughout the country. For some time after the Act mentioned above was passed, there was a great difficulty in the enforcement of its provisions, and it is only in very recent years that the benefits intended by its enactment have commenced to take effect. The new methods of sewage treatment have, no doubt, helped very much to this end, and the authorities have become much more alive to the necessity of preserving the waterways pure and wholesome. The alacrity with which sanitary reformers, as recently as twenty years ago, were anxious to get rid of refuse by pouring it into the nearest watercourse, completely blinded them to the fact that they were only temporarily relieving themselves of an evil that must, sooner or later, have its pernicious results elsewhere.

Three principal methods are recognised and are in use for the purification and disposal of sewage—viz., precipitation, filtration, and irrigation. The precipitation process is carried out by means of various reagents—the principal object in view being the purification of the sewage—lime, either alone or in conjunction with other chemicals, being most frequently used. The process of precipitation by lime has been pronounced, by the Rivers' Pollution Commissioners, "to be a conspicuous failure;" indeed, practically, the same may be said of the majority of the other methods employed in the precipitation of sewage, notably, the lime and sulphate of alumina process; the A. B. C. alum, blood and clay process; the lime and chloride of iron process, &c. The defined position of precipitation of sewage may be summed up in the words of Dr. Dupré, F.R.S., a well-known authority on sewage purification. He says: "As regards processes of precipitation I will merely remark that inasmuch as no proportion of chemicals which can practically be employed will do much more than clarify the sewage, the proportion of chemicals employed should be kept as low as is consistent with the object to be attained—namely, clarification; and that, more par-

ticularly, the use of large quantities of lime should be avoided." In the more modern process, known as "the ferozone and polarite process," which will be subsequently referred to, the introduction of the precipitating material ferozone is followed by filtration of the effluent through a filter containing polarite. The advantage of having a precipitant immediately followed by a filtering medium is obvious.

The filtration system of sewage purification is divided into simple filtration, and intermittent downward filtration. In the former process the sewage is merely strained or screened, but the effluent is not purified. In the latter process, that of downward filtration, the Rivers' Pollution Commissioners reported that no system was attended with better results than the filtration of sewage through a considerable depth of soil. According to the Report of the Commissioners this process of sewage purification "was essentially one of oxidation, the organic matter being converted into carbonic acid, water, and nitric acid; hence the necessity for the continual aëration of the filtering medium which was secured by intermittent downward filtration." The requisite filtering area required to carry out this process of purification, as estimated by the Commissioners, is one acre, drained to a depth of six feet for every 3,300 of the population.

The process of irrigation on sewage farms is the one attended with most beneficial results, as it not only secures a purified effluent, but, in most instances, becomes a source of profit, and utilises the value of the sewage for the benefit of the crops grown on the land; but to insure success the surface must be irrigated on the intermittent system to allow of sufficient aëration of the soil, and no doubt the best purifying results will be obtained by a combination of both methods—viz., irrigation and intermittent downward filtration. This system is in operation at Birmingham, Wolverhampton, Leamington, Reading, Doncaster, Croydon, Nottingham, Warwick, and other smaller towns.

The comparative merits of the systems of purification of sewage are given by the Rivers' Pollution Commissioners, as follows:—

AVERAGE RESULTS.

	Percentage of Dissolved Organic Pollution removed		Percentage of Suspended Organic Impurity removed
	Organic Carbon	Organic Nitrogen	
Chemical processes	28·4	36·6	89·8
Intermittent downward filtration - -	72·8	87·6	100·
Irrigation - -	68·6	81·7	97·7

The systems that have been thus briefly referred to are, no doubt, familiar to many, but the comparatively new systems of sewage treatment that I am desirous of bringing before this Section of the Royal Academy of Medicine are yet not very generally known, and in view of the fact that large and costly works are about to be carried out for the sanitary well-being of the City of Dublin, a short reference to each may thus be opportune. By way of preface it is, perhaps, worth noting that in connection with the London Metropolitan sewage disposal problem a combination of lime and proto-sulphate of iron was recommended by Mr. Dibdin, F.C.S., F.I.C., in the proportion of 3·7 grains of lime, in solution, to 1 grain of proto-sulphate of iron per gallon of sewage matter. The Metropolitan Board submitted the initiative results of this process to four independent chemists of the highest standing—viz., Sir Frederick Abel, Dr. W. Odling, Dr. A. W. Williamson, and Dr. A. Dupré, who advised that the method of precipitation was a good one, but that it left a sufficiently unpleasant smell to prohibit the effluent water being discharged into the river during warm weather at all states of the tide; and they subsequently recommended, after careful observation of the experiments, that if the liquid, resulting from precipitation with lime and proto-sulphate of iron, was subsequently treated with manganate of soda and sulphuric acid, it would be deodorised and purified to such an extent as to render its discharge into the river Thames unobjectionable at all states of the tide—the resulting sludge being conveyed into deep sea by specially-designed steam barges. My object in making this reference is that in the proposed Main Drainage Scheme for Dublin a similar treatment of precipitation, and carriage to sea, of our metropolitan sewage will be carried out from the plans of Mr. Chatterton, C.E. I am not aware what the precipitant agent is likely to be, but the probability is that the London system may be followed in Dublin in its entirety, and, if such be the case, a final and successful solution to what has been the eye-sore of a century or more will be achieved.

THE INTERNATIONAL SYSTEM,

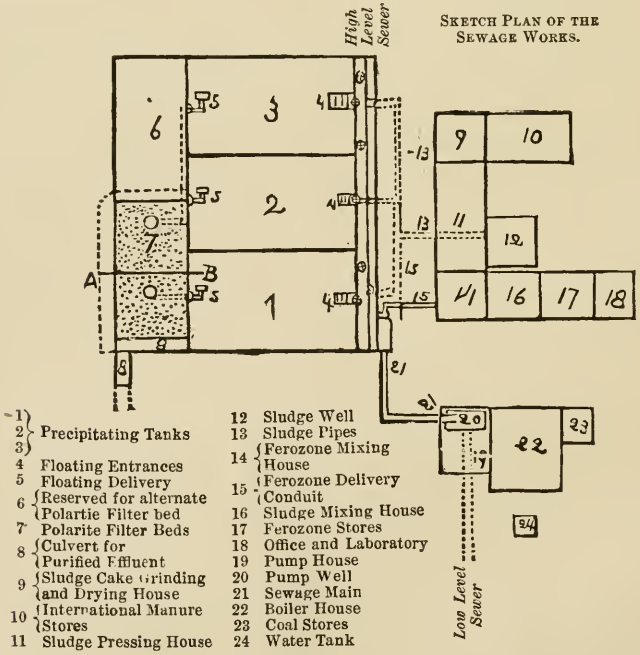
or the Ferozone Polarite System of Purification is of very recent date, and where it has been in operation appears to have been most satisfactory, and its results have been most encouraging. It is quite a new departure in sewage treatment, and

has excited a considerable deal of interest. It has been in use at Acton for the past four years, and the official reports credit it with being as perfect a system, if not the most perfect, of sewage purification as has yet been devised, the purified effluent being inodorous, non-putrescible, clear, and tasteless, which can be discharged into a river or water-course without any danger, or any tendency to undergo secondary decomposition. The process is carried on in two stages, viz. :—

1. By precipitating and deodorising the sewage in settling tanks by the aid of a magnetic precipitant and deodorant called ferozone.

2. By passing the partly purified sewage effluent from the settling tanks through polarite filter-beds, which arrest any solids remaining in suspension, and oxidise and render innocuous the putrescible matter held in solution.

Ferozone is the registered trade name of the material used n deodorising sewage, and precipitating the solids therefrom.



Sketch Plan of the Acton Sewage Works, and Section of the Polarite Filter Beds.

It is rich in salts of iron, alumina, and magnesia, and also contains magnetic oxide of iron, in a very spongy and absorbent condition; by virtue of its soluble iron and magnesia salts it quickly causes subsidence of the suspended solids.

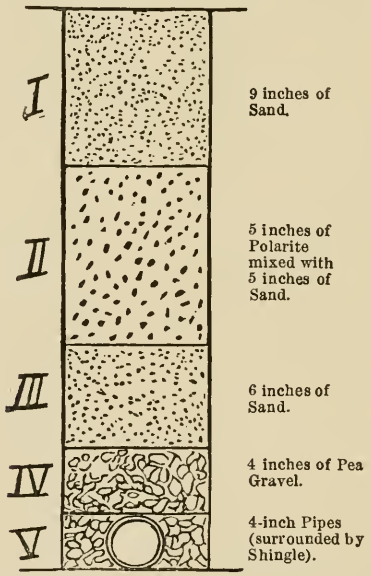
Polarite is the registered name of the material used for further filtering and purifying the ferozone sewage water from the putrescible matter dissolved therein; it is a black, porous, and magnetic oxide of iron, insoluble in water, and practically everlasting; it is very hard and absorbent; although consisting chiefly of iron, it does not rust, and its durability is unlimited; a cubic yard of polarite weighs about one ton, and is sufficient for rather more than six square yards of filter-bed; moreover, it is cheap enough to bring it into general use.

In carrying out the process of purification by this system, the sewage on reaching the outfall works is run through strainers to arrest floating solids, such as corks, rags, &c., and then flows quickly through a floating trough into a settling tank, the floor of which inclines towards the centre, so that a gutter may convey the sludge to the outlet valve. Before entering the tank the crude sewage receives a dose of ferozone which costs about one farthing for every thousand gallons of sewage treated. This can be added automatically by placing baskets of ferozone in the flowing sewage or by using Beloe's patent automatic sewage-mixing machine. In places where the sewage does not flow by gravitation, but has to be pumped, and steam-power is therefore available, the ferozone may be ground with water or sewage in a small edge-runner mill and added automatically to the crude sewage in a liquid state. The flow of sewage through the tanks should not be continuous if it can be avoided. Quiescent tanks are better for precipitation purposes, whatever kind of precipitant be used. When a tank is full its contents should be left standing for about two hours, so that the ferozone may have time to act thoroughly. As towns differ in the quality of their sewage, the needful period of quiescence may vary in different places. The ferozone will cause deodorisation and precipitation to take place in the sewage, and a considerable part of the albuminoids in solution will coagulate and be precipitated with the solids. The supernatant sewage-water thus clarified would then be drawn off and run through polarite filter-beds which produce a higher degree of purification.

The polarite filter-beds usually consist of six inches of broken

stone in which small agricultural drain-tiles are embedded, three inches of gravel, six inches of sand, twelve inches of polarite and sand mixed in equal proportions, and at the top a layer of nine inches of fine sand, making a total depth of three feet of filtering material. The depth of the layers is sometimes varied to meet special requirements. Polarite filters purify tank-effluents which have been treated with ferozone at the rate of 1,000 gallons per square yard in 24 hours. They give better results than are generally produced by land filtration, and at less cost and without nuisance. Land filters about 1½ gallons per

SECTION ON LINE A.B. OF POLARITE FILTER BED.



VERTICAL SECTION OF "POLARITE" FILTER BED.

square yard in 24 hours, therefore one acre of polarite filter-bed will do more effective work than 666 acres of land. Hence the cost is much less than that of a sewage farm, and at the same time the results produced are more certain. The value of polarite for sanitary purposes can scarcely be over-estimated. By using it in small but powerfully active filter-beds it is unnecessary to buy large areas of land for sewage farms which, often become a public nuisance. Land is unable to take a continuous supply of sewage without great deterioration in its purifying

and aërating properties. It gets clogged and choked with albuminous and glutinous matters, and becomes sewage-sick and inefficient as a purifying agent. Sewage comes every day to be treated whether the farm is, or is not, in a condition to deal with it. In wet seasons, when the farm is sodden by rain and wants rest, an increased quantity of sewage comes to be purified.

The polarite filter-bed only requires a few hours' rest occasionally for aëration and for cleansing the surface sand, which can be done by an improved method at a nominal cost. The polarite never requires to be removed or replaced. Hence it is better to lay down several small beds rather than one or two large ones, so that they may rest a few hours alternately for aëration and cleansing.

The resulting ferozone sludge is comparatively inoffensive in odour, and in this regard has an advantage over the lime, and other processes; it has been proved to be richer in manurial value, and the sewage manure produced by the process is shown by analysis to contain nitrogen equal to from one to two per cent. of ammonia, besides phosphates; if placed under cover it dries very quickly, and can be ground into powder. At Acton it is sold as a fine powder at the large sum of 30s. per ton, whereas in districts where lime is the precipitant, the resulting sludge is carted away as a worthless material. Certainly this system of sewage treatment bids fair to solve a difficult problem, and if the resulting sludge can be made to return a fair revenue, I apprehend that urban and rural sanitary authorities will not be slow to recognise its merits. In Ireland it has not had a trial, but it is in operation at Hendon, Swinton, near Manchester, Balmoral, and sewage works are in process of construction at Guilford, Birkdale, and Sale.

As a filtering medium, polarite appears to have undoubted advantages as compared with sand-filtering material, and it is recommended for filter-beds in water-works, on the ground of economy as well as efficiency. It is well known that sand filter-beds have no chemical purifying power; they merely act as strainers, and retain putrescible matter, instead of oxidising and making them innocuous, and they leave them unchanged to contaminate the water. An instance of this occurred in the north of England, where an outbreak of typhoid fever was caused by the impurity of the filter-beds at the water-works. A Government inquiry traced the outbreak to fever germs in the filter-

beds, and the epidemic did not cease until the filter-beds were closed. Polarite not only enters into the purification of sewage effluents, but is now being used in the laying down of filter-beds in various parts of England, and report speaks highly of it as a filtering medium.

THE TREATMENT OF SEWAGE BY ELECTRICITY

is the most recent of all methods, and may be said to be very promising. Mr. Santo Crimp, referring to the Webster electrical process for sewage purification, says: "When it is considered that the application of electricity is almost daily extended to new objects, and that the science is as yet in its infancy, it must be admitted that the results achieved by the Webster process are of the most encouraging nature. The time may come when our towns will be lighted with electricity by night, whilst by day the dynamos will be employed in purifying the sewage; then the loading of the sewage with chemicals, with the consequent production of large masses of sludge, will no longer be necessary." Sir Henry Roscoe, M.P., F.R.S., has carefully investigated this process, and he mentions that "the quantity of sewage operated on in each experiment was about 20,000 gallons. The reduction of organic matter in solution is the crucial test of the value of a precipitating agent, for unless the organic matter is reduced the effluent will putrefy and rapidly become offensive. I have not observed in any of the unfiltered effluents from this process, which I have examined, any signs of putrefaction, but on the contrary a tendency to oxidise. The absence of sulphuretted hydrogen in samples of unfiltered effluents, which have been kept in stoppered bottles for three weeks, is also a fact of importance. By this process the soluble organic matter is reduced to a condition favourable to the further precipitation by natural agencies." Mr. Alfred Fletcher, F.C.S., F.I.C., Inspector under the Rivers Pollution Prevention Act, states:—"The result of my examination of this process has been to convince me of its efficiency in clarifying sewage, of removing smell, and in preventing putrefaction of the effluent. I am of opinion that such effluent as I saw at Crossness can be discharged into a river, or after passing through a thin layer of sand, even into a stream, without causing any nuisance."

Analyses of Samples of Sewage treated by Webster's Electrical Process.

Parts per 100,000.

Description of Sample	Oxygen consumed	Free Ammonia	Albuminoid Ammonia	Chlorides	Notes
(A) Mixture of 3 samples of raw sewage collected during time of treatment	2·292	1·9	0·65	44·4	Stank badly on 3rd day
(B) Mixture of 3 samples of treated sewage flowing into tank before settling	0·917	1·75	0·6	37·2	Faint smell on 5th day
(C) Same as sample A after settling 24 hours	—	1·64	0·4	—	Stank badly on 3rd day
(D) Same as sample B after settling 24 hours	—	1·84	0·12	—	Faint smell on 5th day
No. 7. Average sample of raw sewage under treatment	2·5	1·8	0·65	41·2	Stank badly on 3rd day
No. 8. Treated sewage after 2 hours' settlement in tank	0·583	1·08	0.07	35·8	Perfectly sweet after 10 days
No. 9. Same as No. 8 after filtration through 6 inches of sand	0·536	1·00	0·06	35·6	ditto
No. 10. Treated sewage after 3½ hours' settlement in tank	0·5	1·28	0·05	35·6	ditto
No. 11. Same as No. 10 after filtration through 6 inches of sand	0·5	0·91	0·01	35·6	ditto

Probably low as the samples had been kept

The effluent produced by the electrical process, Mr. Webster states, contains about three grains per gallon of suspended matters, which consist almost entirely of oxide of iron, which is quite innocuous. Where this may be objectionable, from a sentimental point of view, it can be entirely removed by filtration through a few inches of sand.

The bacteria question is one which has probably still to be settled, but, in order to obtain some information as to the action of the iron compound produced by electro-chemical decomposition, some experiments were carried out, with the result that, after a given treatment, the whole of the bacteria were killed. In the case of experiments carried out in Paris, with ordinary treatment by means of iron electrodes, the results were as follows:—

	Raw Sewage	Effluent
Organisms per cubic centimetre,	5,000,000	600

In another experiment, in which the effluent was treated still further, all organisms were destroyed.

Unquestionably, this process of sewage treatment has many advantages, and may yet solve the vexed sewage problem.

Mr. Webster remarks further, "That it was while working with perchloride of iron, as a purifier of sewage that the importance of iron salts, in relation to organic matter, became apparent; and it was in connection with this chemical and free chlorine gas that the idea of electrolysis suggested itself."

THE "OXYGEN PROCESS."

A new process, which has had its birth in Ireland, and which promises to fully realise the expectation of its promoter, is the "Oxygen Process of Sewage Purification," devised by Mr. W. E. Adeney, F.I.C., and Mr. W. Kaye Parry, M.A., C.E. It has been submitted to an exhaustive investigation both in the laboratory and at some works at Monkstown, and the results have been successful. The process, moreover, has been examined in detail by the Chief Surveyor to the Board of Public Works, and has been selected by that body for the purification of the sewage of the Lunatic Asylum at Dundrum. To be brief, the results effected by this process are the complete separation of all matters in suspension in sewage, in a state suitable for air drying and utilisation as a manure, and an effluent of any degree of purity according to the circumstances of the locality to which it is applied may demand.

In this process the solid matters in the sewage are first separated from the soluble constituents by subsidence in a tank of special construction, no precipitating chemicals being employed. The destruction of the fermentable organic matters in solution in ordinary sewage is effected by taking advantage of the power which harmless micro-organisms, the germs of which are known to be widely distributed in the earth, air. and water, have, when growing under the most favourable conditions, of rapidly decomposing such matters into carbonic acid, water, ammonia, and also nitric acid. Under proper conditions these products result directly from the decomposition of the soluble fermentable matters in sewage, without any intermediate putrefactive fermentation being set up. The formation of offensive bodies is in fact entirely avoided in this process.

The essential condition for the healthy and rapid action of the

organisms here referred to, is a plentiful supply of oxygen, free or combined. The necessary supply of oxygen is secured by a careful use of nitrate and manganate of sodium. One of the products of decomposition of the latter chemical is oxyhydrate of manganese; it is completely recovered by subsidence in a second tank, similar in construction to the one employed for the separation of the solid matters of the sewage. The recovered oxyhydrate of manganese may be dried and re-converted into manganate of sodium, and so may be used over and over again. It may also be employed for mixing with the solid matters of the sewage separated in the first tank to prevent putrefactive fermentation being set up in them during the process of air-drying them.

Another system,

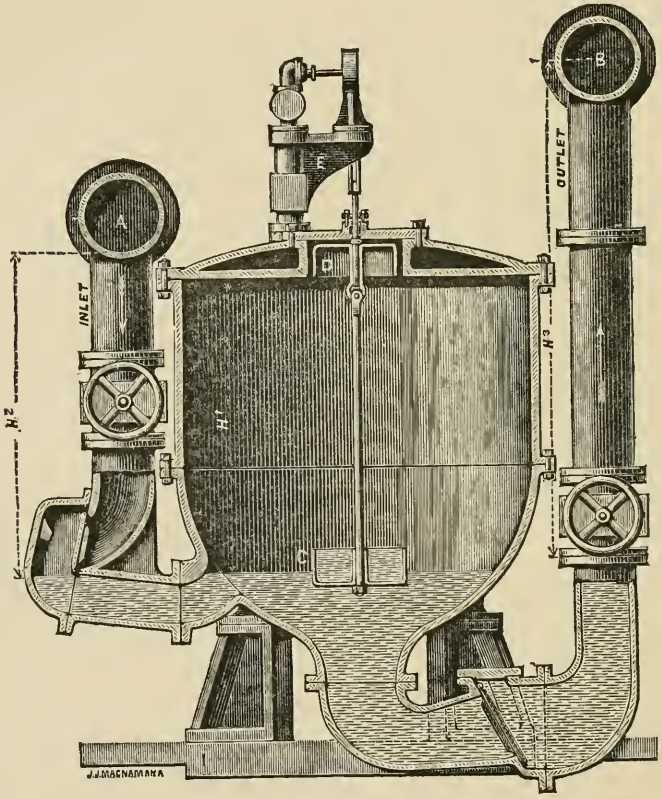
THE SHONE HYDRO-PNEUMATIC SYSTEM

is also of comparatively recent date, and is in operation at Eastbourne, Shirley, and Freemantle, near Southampton, Lowestoft, Stoke-on-Trent, and some other thirty or forty towns in England, as well as at the Houses of Parliament. The system appears to work admirably, and is particularly adapted to districts and towns of a low-lying nature, and where the volume of sewage is insufficient to cause what is termed a self-cleansing velocity in the sewers. Correctly speaking, the Shone System might be better described as a successful method of getting rid of sewage by means of automatic sewage ejectors, and a writer described it some time since in the columns of *The Health Record* as a system so elastic in its application that it can not only be successfully applied to a solitary building, but is equally adaptable to towns, cities, and rural districts.

In the subjoined illustration, the working of the Automatic Sewage Ejectors is shown, and is carried out as follows:—

The sewage gravitates from the sewers through the Inlet Pipe A into the Ejector, and gradually rises therein, until it reaches the underside of the bell D. The air at atmospheric pressure inside the bell is then enclosed, and the sewage continuing to rise outside and above the rim of the bell compresses the enclosed air sufficiently to lift the bell, spindle, &c., which opens the Compressed Air Admission Valve E. The compressed air thus automatically admitted into the Ejector presses on the surface of the sewage, driving the whole of the contents before it through the bell-mouthed opening at the bottom, and through

the Outlet Pipe B into the iron sewage rising main or high level gravitating sewer, as the case may be. The sewage can only escape from the Ejector by the outlet pipe, as the instant the air pressure is admitted on to the surface of the fluid the valve on the Inlet Pipe A falls on its seat and prevents the fluid escaping in that direction. The fluid passes out of the Ejector until its level therein reaches the cup C, and still continuing to lower, leaves the cup full until the weight of the liquid in the



Automatic Sewage Ejector.

portion of the cup thus exposed and unsupported by the surrounding water is sufficient to pull down the bell and spindle, thereby reversing the Compressed Air Admission Valve, which first cuts off the supply of compressed air to the Ejector, and then allows the air within the Ejector to exhaust down to atmospheric pressure. The outlet valve then falls on its seat

retaining the liquid in the sewage rising main; the sewage then flows into the Ejector through the inlet once more, driving the free air before it through the air valve, as the sewage rises, and so the action goes on as long as there is sewage to flow.

The valuable feature connected with the system consists in this—that by its aid the "separate system" of drainage can be carried out in the most perfect and sanitary manner possible, whether the district to be drained be flat, low-lying, tide-locked, or otherwise. All the chief sanitary engineers of the present day recommend the adoption of the separate system in preference to the combined system. But towns drained on the separate system now are few and far between, the reason being that the engineers who have designed the works could never get the hydraulic conditions necessary to cause the sewage to flow freely to what are called the outfalls; because it is well known that small volumes of sewage require to be turned into small sewers, having inclinations suitable to their sizes; and in flat districts the necessary inclinations can never be obtained.

In those districts hitherto drained by gravitation *per se*, the practice has been to construct big sewers at such gradients or inclinations as the configuration of the country or town would admit of. In dry weather, when only the sewage proper is discharged into such sewers, the volume is insufficient to cause what are called a self-cleansing velocity in the sewers, which then become sewers of deposit, and the large spaces within them not occupied by the sewage are more or less filled with foul air mixed with sewage gases, and these are permitted to escape haphazard into the streets under which they are laid, and into the houses with which they are connected.

In this manner unsanitary, and not sanitary, drainage works have been, and still are being, executed all over the world. But by the Shone System the most perfect hydraulic gradients can be secured throughout the whole area to be drained. Besides securing self-cleansing sewers by the Shone System, these sewers can be effectually ventilated by the action of the ejectors in a most simple but thoroughly scientific and practical manner.

It will be noted that the modern or later attempts to solve the sewage difficulty possess many features of practical interest, and I claim the indulgence of this Section if I have unduly trespassed on its time.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Report of the Hyderabad Chloroform Commission. With a Preface by Sir Asman Jah, K.C.I.E., Prime Minister of Hyderabad. Bombay: Printed at the *Times of India* Steam Press. 1891.

(*Continued from page 321.*)

The conclusions of the Committee did not pass unchallenged. The Glasgow Chloroform Committee, consisting of Drs. John G. M'Kendrick, Joseph Coats, and David Newman, wrote as follows to the *Lancet*:—

"The Hyderabad Report, which appeared in the *Lancet* of January 18th, naturally attracted our attention and called for remark, especially as it seemed to traverse certain of our conclusions. On carefully reading the Report, it appeared to us that, so far as the facts are concerned, it generally confirmed our own observations as to the action of chloroform both on respiration and on the heart. Some of the inferences, however, are opposed to ours; but they are also opposed, as we believe, to the facts stated in the Report itself. We therefore propose to criticise the Report, and we would have done so immediately after its publication but for a request communicated to us that we should wait for the publication of the tracings on which the Report is largely based. *We at once agree to postpone our remarks*, and only make this communication lest our silence should be misinterpreted."

In a footnote appended to this letter we read—"In spite of this statement the Glasgow Committee published their remarks one week before 'the publication of the tracings on which the Report is largely based.'"

It is unfortunate that the Report gave rise to a discussion in which a criticism of the experiments, how they were conducted and their value, degenerated into something like the bitterness of a theological controversy. The opponents of chloroform urged its rejection more forcibly than logically, and the issue to be tried seemed forgotten in the heat begotten of the dispute. Some eminent surgeons did contribute valuable material toward the much-

disputed worth of chloroform, notably Dr. Macewen, whose Address as President of the Medico-Chirurgical Society of Glasgow, on the 31st of October, 1890, is one of the most valuable contributions to the study of anæsthetics we possess. Viewing the question from the clinical standpoint, this able surgeon says:—

"Let the student study the physiological action of chloroform, learn that it is an agent which places the functions of the cerebro-spinal axis in abeyance, but does so *seriatim*, in a definite order, and which may, if pushed far enough, suspend them all. Let him be fully alive to its dangers, and how to counteract them, and let him recognise the safety zone of chloroform narcosis, and he will find it an anæsthetic powerful, it is true, but controllable, and though not infallible, yet a most valuable and useful servant. Meanwhile, chloroform is one of the safest and best anæsthetics, though it requires for its proper administration knowledge, skill, and assiduous attention."

The restoration to medical favour of chloroform was, at first, fraught with much danger to the public, and was injurious to the therapeutic reputation of the drug. Numbers of anæsthetists who formerly gave ether now disregarded it for its rival, and commenced chloroformisation without that knowledge and skill on which Dr. Macewen so properly lays stress, and very soon "Death under Chloroform" became a familiar heading in the London weekly medical journals.

As might be expected, an outcry against the use of the anæsthetic was raised by those opponents whose dislike to the drug had become crystallised into implacable hostility to its use.

No Commission had ever pronounced the drug to be innocuous. Every member of the medical profession who administered anæsthetics recognised that chloroform and ether were powerful drugs, and as such should be used with a full knowledge of the responsibility attending on their administration. Such knowledge can be attained only by study; it is not intuitive; and the study must take the form of carefully-conducted experiments and close clinical observation.

The question naturally arises, Were the Hyderabad anæsthetic experiments of such a nature as to command the approval of the members of the medical profession? Objection is taken to them on the grounds that the physiological effects of ether and chloroform on the lower animals are unsafe guides for their use on the human being; but hitherto no exception has been taken to similar experiments in the case of other drugs. Strychnin, digitalis, and the

majority of our more potent medicines have been administered to the lower animals with the express object of learning from their physiological effects the therapeutic action and the value of the drug in human diseases.

The Nizam's Commission used the higher mammalia for experimentation, many of the experiments being performed on apes; and we do not see that a closer approach to the human being could well be made—it should be as satisfactory as experiments made on frogs. Yet those who readily accept the results of experiments made on the vascular system of frogs with digitalis and other drugs, and act on them in practice, cavil at those made on the higher mammalia with ether and chloroform.

The cavilling is not alone confined to the animals selected. We are told that the climate of the Deccan, by its high temperature, vitiates, or at least lessens the value of, the experiments. Chloroform, according to the objectors, is better suited to hot climates than to cold or temperate ones—an objection of little value, when we remember that in Scotland, as in the Deccan, chloroform has proven its great worth.

Again, the ground of objection is shifted, and we are told that the deductions of the Commission are contradicted by the experience of operative surgeons, and in proof of this contention we are referred to the current medical literature, where "Death under Chloroform" is a frequent heading. For years past we have carefully examined home and foreign journals for records of deaths from anæsthesia, and we do not hesitate to say that they are much less numerous than is generally supposed. We find that when a death from chloroform is reported the case is freely copied. The fact that in the Indian Empire, the Colonies, the Western and Southern Commonwealths of the U.S.A., on the Continent of Europe, and throughout the great Southern Continent of America, chloroform is the favourite anæsthetic is a strong confirmation of the finding of the Hyderabad Commission. Used throughout the habitable globe, and manufactured in yearly increasing quantities, the drug is daily submitted by thousands of intelligent and interested observers to trial and bears the test. An occasional failure, it is true, now and then horrifies and intimidates a nervous anæsthetist, who promptly publicly recants and abjures the drug, and his conversion is hailed by the ether advocates "as a brand plucked out of the fire."

This is not the proper spirit in which to approach a scientific

question. Medicine should be studied free from prejudice; to form theories from ascertained facts is allowable and desirable, but to twist facts to suit existing theories is unjustifiable.

The Edinburgh students taught by Syme found that, used as he directed, chloroform is a safe and reliable anæsthetic; but the same drug in the practice of some English and New England surgeons is declared to be most unsafe. A Commission sits to investigate the best means of ensuring safety under anæsthesia, and to decide on the relative merits of ether and chloroform. We have given their conclusions—conclusions which appear to us to be the natural outcome of the experiments, and in no sense of the word forced.

Nothing more distinctly shows the earnest desire of Surgeon-Major Lawrie and his colleagues to place the fullest information before the profession for their guidance on this great question than their including in the volume the replies made to their views. The ablest of the objectors, Mr. Alexander Wilson, of Manchester, writing in the *Medical Chronicle* of April, 1890, after summarising the opinions of Gibson, Wakley, Snow, and others on the question, writes:—

"There may be several objections taken to the unreserved application of the conclusions of these experiments to man.

"First, there is the difference which may exist in the action of chloroform on the heart of man and of animals. There is the possibility that the habits of life, the taking of stimulants and narcotics, especially the habitual use of drugs like tobacco—for the condition of the vagus centre is shown to be of great importance in relation to chloroform narcosis—may have some effect, if not in altering the behaviour of the heart muscle or its innervation, at least in modifying that chain of events upon which depends the absorption and distribution of the chloroform by the blood. Amongst other points of difference between man and the animals experimented on are the relation of the vital capacity to the size of the animal, and the interference with complete filling of its lungs, resulting from holding the animal.

"It has often been shown that the suddenly fatal cases are rare in human subjects in which there is any impediment to the free expansion of the chest—*e.g.*, Clover has pointed out that a phthisical patient is less likely to take a fatal dose of chloroform than one with healthy lungs, because his chloroform-absorbing capacity is diminished. Again, it has been noted that few patients die suddenly from chloroform, when it is inhaled lying on the side; also few, if any, sudden deaths are reported in cases of ovarian tumours. The explanation of these cases is that the interference with full expansion of the lungs by the position or the

presence of the tumour prevents the lungs taking in the necessary fatal dose.

"On the other hand, the greater number of the suddenly fatal cases occur in people with healthy chests and large vital capacity—*e.g.*, in reducing dislocations of the shoulder, and in minor operations, such as teeth extraction, especially in those in which the patient, being in the natural upright position, can give the respiratory muscles full play, and completely fill the chest.

"Thus it is worth considering if the holding of a struggling animal, such as a dog, might not so interfere with its breathing as to prevent the full dose being taken, especially as the animal would not be likely to be held in its natural position. There is an indication in the Report that, in at least some cases, the holding of the animal did actually interfere with its respiration. If it did so in one case it probably did so in many, especially as a dog's thorax is so shaped that to hold its fore legs together in front of it, would prevent the complete expansion of its chest, and so prevent it suddenly taking a fair dose of chloroform vapour.

"In animals, too, we have an absence of the desire to inhale freely. In at least one reported case the wish to inhale the chloroform freely contributed largely to the fatal result.

"In chloroform accidents in man, of the very sudden variety, considered to be due to cardiac syncope, a certain set of conditions are present which are difficult to obtain in animals.

"The subject is generally young or middle-aged, with an expansile chest; the chloroform is willingly inhaled, quietly at first, until semi-unconsciousness is produced, when the fauces and glottis are insensitive; then, during struggling, with or without holding the breath, the patient, often in an upright or semi-upright position, and having his arms fixed by the assistants, which gives his respiratory muscles good purchase, gets one or two deep inspirations at the greatest advantage, and so obtains the maximum amount of chloroform.

"There is the desire to get under the influence of the drug the voluntary inhalation followed by the still steady conscious anxiety to inhale more, and then the involuntary deep inspiration, in the natural position in which a deep inspiration can be best taken.

"All these are conditions difficult to obtain in experiments on animals, and it is only under such conditions that the supposed cardiac paralysis has been produced in man.

"The interval between the stoppage of the heart and the respiration is so short that these points, trivial though they seem, may easily be of importance in modifying the result.

"It has always been maintained by the advocates of the syncope theory that it is only under certain circumstances, and by a certain definite combination of factors, that chloroform sufficient in quantity to paralyse

the heart can be introduced into the blood, and that this particular combination of circumstances occurs very seldom—about once in every 1,000 or 2,000 administrations.

"Thus, as Dr. Snow pointed out years ago, the effect of chloroform on any given case varies with the amount contained in the blood at any given time.

"This depends upon the strength of chloroform vapour exhibited to the patient, the ease with which it is inspired through the glottis, and the depth and frequency of the inspirations; the amount actually absorbed depends upon the condition of the blood (its capacity for chloroform may vary), the time it stays in the lungs, the rapidity of the circulation, and other factors.

"The idea was that by certain combination of these several factors, the maximum quantity of chloroform was absorbed by the blood in the lungs and hurried to the heart, the next organ in the order of the circulation, not merely distending its cavities with chloroform-saturated blood, but also being distributed by the coronary arteries to every part of its substance, and so causing paralysis. This result is also assisted by the condition of distension of the heart and the venous condition of the blood.

"That the arrangement of these various factors—respiration, pulse, &c., has an important bearing in the action of the drug on the heart, is well shown by these experiments of the Commission. These showed that by varying the methods of administration in different experiments it was possible to make the heart cease beating at intervals of from one to twelve minutes after the cessation of the respiration. It is not impossible that by further variations the time might have been reduced until the stoppage was simultaneous with, or even preceded the cessation of respiration, and the experiments would have been thus made to accord with certain reported fatal cases in man.

"The cases in which the heart ceased soonest after the respiration were cases complicated with asphyxia—that is, cases in which semi-asphyxia was produced, presumably followed by deep inspiration; under these circumstances the heart ceased beating one minute after the respiration stopped. Now it is under conditions similar to these in man, that the so-called cardiac syncope occurs, and it is by working on these lines that attempts to produce it in animals should be made; but it appears that the Commission only made some four of these experiments, hardly a sufficient number upon which to base an important statement.

"In ordinary practice, the several conditions giving a fatal result from cardiac syncope are combined about once in every 2,000 or 3,000 administrations. Because the Commission did not obtain it in 600 attempts they conclude that it cannot exist. This is scarcely reasonable, especially as the bulk of their work was not upon the lines which promised the nearest result—viz., those of deep inspiration after semi-asphyxia.

"The manner or means by which the movement of the heart was tested are of some moment, as explaining the discrepancy between the results of experiment and practice. Most of the cases were tested by a needle introduced into the heart, or by opening the chest. These methods will indicate the merest quiver of the heart muscle—movements that would give no indication of their presence to ordinary observation, and movements that would probably be of no functional use—*i.e.*, in no sense contractions. It has been noticed by other observers, that the hearts of animals killed by chloroform show fibrillary irritability, after the heart muscle, as a whole, is incapable of contraction—a condition similar to this would indicate movement tested by the above, but such movement would be fallacious.

"It would be interesting to know the degree of action exhibited by the heart after cessation of the respiration. Was the power of propelling blood retained? If the action consisted only of muscular tremors it would be of little value, and hardly what is understood by action of the heart.

"The following case may be here quoted as a good example of the class of chloroform accidents, upon which is based the theory of the action of chloroform on the heart:—

"The patient was a strong, healthy labourer, who required an anæsthetic while some adhesions were broken down in his knee-joints; he had taken chloroform successfully three months previously. The case is reported by the surgeon who was superintending the administration of the anæsthetic. Chloroform was administered by a towel.—(*British Medical Journal*, 1884, Vol. II., p. 811.)

"'The patient showed not the least sign of nervousness . . . and commenced inhaling by several rapid shallow breaths, as if determined to get quickly under the influence of the anæsthetic. Following immediately upon the shallow movements were three or four deep inspirations. Feeling that this method must have entailed a large and rapid consumption of chloroform, I directed the house surgeon to remove the cloth, when the patient, *though still breathing*, was seen to have his eyes wide open, the pupils rapidly dilating, and the conjunctiva insensible. The face was neither livid nor pale; the lips, indeed, were of their normal pink hue, and the cheeks slightly flushed. In fact, beyond the condition of the eyes, there was nothing in the facial aspect to excite alarm. Up to this point, the time of the inhalation could not have exceeded one to two minutes. On feeling the right radial no pulse could be detected. The head was lowered, respiration then ceased; not, however, until three or four breaths had been drawn after the recognised cessation of the pulse. After the commencement of artificial respiration, the patient spontaneously made several gasps, but there were no further signs of vitality.'"

"This case is valuable because it is reported, not by the administrator of the anæsthetic, but by one who was merely watching the case, and who had ample time accurately to note the events which occurred; and the absence of struggling, so common in suddenly fatal cases, made the observation of the symptoms easy.

"Taken in conjunction with the numerous reported cases in which the patient passes suddenly from a condition of active struggling to a state of collapse, with gasping respiration and absence of pulse, it proves that chloroform, if it does not actually paralyse the heart, may cause death by some means equally sudden and certain; and that in such cases the heart is practically stopped, as far as its functional value is concerned, before the respiration. The case indicates also that observation of the respiration alone will not give adequate warning of danger, for the respiratory movements may be perfect one second and the next be on the verge of extinction, and hopelessly beyond recovery. It also shows that fatal damage may have been wrought on the system before there is any outward sign.

"This case is also noteworthy as contradicting the statements made by the first Hyderabad Chloroform Commission that, since 1856, no death from chloroform has occured in which the respiration and the respiration alone, was attended to throughout the administration.

"The patient was breathing perfectly, and there was no sign of respiratory failure when the administration was suspended, so that was the respiration alone observed it would only have signalled any danger some seconds later. There can be little doubt but that the pulse in such a case, where the patient was quiet and breathing tranquilly, would have exhibited some decided alteration had it been observed.

"In the second portion of the Report it is shown that the essential action of chloroform on the system is to cause a fall in the mean blood-pressure. This fall is proportionate to the amount of chloroform inhaled and absorbed into the system. [It would have been interesting to have known the relation, if any, the condition of the blood-pressure bore to the state of anæsthesia.]

"This fall in blood-pressure bears some relation to the respiration, but what this relation is is not distinctly stated, and the cause of the fall in pressure is also not clearly assigned, except (Sec. 19) that it is not due to the direct action of chloroform on the heart, and must be due to paralysis of the vaso-motor centre. This is important when taken in conjunction with the following parts of the Report (Sec. 3): ' . . . If the chloroform is pushed further there comes a point not easy to define when the blood-pressure and respiration will no longer be restored spontaneously, although the heart continues to beat after the inhalation has stopped.' And also (Sec. 25): '. . . . It is never in any case certain that artificial respiration will restore the natural respiration and blood-pressure, *no matter how soon it is commenced* after the respiration stops.'

"This exposes a comparatively new and insidious danger in chloroform administration, and one as difficult to treat as the old cardiac syncope. It is quite conceivable that under certain circumstances the dose necessary irretrievably to damage the vaso-motor centre may be inhaled with extreme rapidity, and that while the respiration and pulse are still present the centre may be almost paralysed before such warning has been given.

"From a record of fatal cases in man, it appears possible that this paralysis may, in certain conditions, be effected almost instantaneously, and before complete insensibility has been produced.

"In Section 20 injection of chloroform into the jugular vein caused no paralysis of the heart. It should be noted that this is not the most direct channel by which the heart can be reached; and the experiment, when compared with inhalation, is open to criticism. Chloroform injected into the jugular vein passes with the venous blood to the right auricle, where it is mixed with the blood of the inferior vena cava from the liver; from the right side of the heart it passes to the lungs, where the chloroform, being volatile, and the air in the alveoli of the lungs free from chloroform, a good deal may be lost; finally, what remains of it reaches the heart.

"Chloroform given by inhalation is much more likely to reach the heart directly in large doses passing into the air cells; about one-fifth of the whole blood of the body is at once exposed to it. This blood, saturated with chloroform and unmixed with any non-chloroformed blood, goes direct into the left auricle and ventricle, and by the coronary arteries is first distributed into the very substance of the heart itself. As Dr. Snow puts it: 'In inhalation the heart is always a little in advance of the rest of the body as regards the amount of chloroform vapour to which it is subjected.' Chloroform thus given by inhalation may have a more potent action than when injected into a vein, and the results of the two methods cannot well be compared.

"In Section 12 the effect described as that of asphyxia on the blood-pressure, in causing a rapid fall of blood pressure and slowing of the heart beat, is contrary to the received ideas on the subject. ('Human Physiology.' Landois and Stirling. 1888 edition, p. 198). During asphyxia, 'the blood-pressure measured in a systemic artery—*e.g.*, the carotid—rises very rapidly and to a great extent during the first and second stages; the pulse beats are at first quicker, but soon become slower and more vigorous. The rise in pressure is due to stimulation of the general vaso-motor centre by the venous blood, and the slow beating of the heart to the action of the venous blood, on the cardio-inhibitory centre in the medulla.'

"The attempts to produce shock during the inhalation of chloroform (Sec. 33) uniformly failed. In experimenting on animals there are several

sources of error. In the first instance, it is doubtful if animals suffer as much from shock as man, there is an absence of mental terror and the depressing effect of the anticipation of the operation, &c.

"It is well known that the extraction of a single tooth in a state of semi-anæsthesia may produce a considerable amount of shock and a painful mental impression that lasts for weeks—an amount of shock far greater than would have been felt had no anæsthetic been exhibited.

"The lowering of the blood-pressure in the case of a fatty heart (Sec. 39) cannot be altogether an advantage in chloroform administration. It must, by the efforts the heart makes to keep up the pressure, increase the work of the heart, and at the same time diminish the blood supply to the heart itself.

"It is important to note that in all these experiments there are double and treble reactions, which, though they have a beneficial effect in diminishing the amount of chloroform absorbed, are in themselves elements of danger.

"Thus semi-asphyxia and inhibition of the heart are elements of safety by preventing the 'intake' and distribution of chloroform, but the ultimate result of this is to cause rapid breathing and quick pulse, which, by the extra 'intake' of chloroform and the quick distribution of that already inhaled, is an element of danger.

"This change from a slow to a rapid pulse may be attended with very nearly fatal results, as is shown in Sec. 34, where an animal was nearly killed by a short inhalation, from the inhibition of the vagus having been stopped, and a more rapid pulse consequently resulting. This fall in pressure is in itself, in feebly nourished subjects, a source of danger, causing syncope from cerebral anæmia.

"There is a peculiar animus against the feeling of the pulse displayed by Surgeon-Major Lawrie in the first Report, and not entirely absent in the second. He goes so far as to state, 'that since the year 1855, in Great Britain, there is no death from chloroform recorded in which it was proved that the respiration alone was attended to throughout the inhalation.' This is surely a mistake; there are several fatal cases where the respiration only was attended to, one of which is quoted here, and there are many more in which respiration was attended to as fully as possible.

"Then reference is made to the teaching of what are termed antagonistic schools: Syme taught—'We are guided as to the effect of the chloroform not by the circulation, but entirely by the respiration.' Erichsen teaches: 'When fully anæsthetised the patient requires the most careful watching by the person who administers the chloroform; his finger should never be off the pulse, nor his eye taken away from the countenance of the patient."

"Surgeon Lawrie considers these opinions 'absolutely irreconcilable.'

They are nothing of the kind. Erichsen's directions are only a little fuller and more complete than Syme's, and not incompatible with his.

"I do not know the wording of the earlier editions of Erichsen, but in recent ones (edition of 1884, Vol. I., p. 24), in addition to the words quoted it is stated, 'the breathing must be carefully observed.' It is unlikely that it is not mentioned in some part of the earlier editions, especially as Dr. Snow, with whose works Mr. Erichsen would no doubt be familiar when writing the above, constantly emphasises the necessity for observing the state of the respiration and in reference to this point says:—'The importance of attending to the respiration of the patient has previously been noticed, and it is so obvious a symptom that it can hardly be disregarded if any one is watching the patient; it speaks, moreover, almost to one's instincts, as well as to one's medical knowledge.' ('Snow on Anæsthetics,' p. 258, 1888).

"Apart from any action which chloroform may have on the heart itself, the experiments made supply abundant reason for a careful observance of the pulse during the administration of the drug, and it is surprising that this point has not been referred to in the Practical Conclusions. Its omission looks suspiciously like the result of prejudice against it.

In the Report it is shown that the amount of chloroform inhaled (the 'intake') depends upon the respiration, but that the effect of this 'intake,' the way in which it is utilised, lies with the circulation, with the force and rapidity of the pulse or the reverse.

"It is shown that, with a slow pulse, concentrated chloroform vapour can be exhibited with impunity, but with a full, bounding pulse dilute chloroform vapour may be dangerous. These variations occur in practice, from the quick full pulse of a patient with a high temperature to the slow pulse of a patient with jaundice.

"There have been fatal cases in man distinctly due to a non-consideration of these points. [Case reported in *British Medical Journal*, 1887, Vol. II., p. 951, where ether was given first, and then a small dose of chloroform proved fatal.] This is again illustrated in Experiment 177, Section 34, where sudden quickening of the pulse, from cessation of vagus inhibition, suddenly placed the animal in a condition of 'extreme and unexpected jeopardy.' Yet from some reason, though stress is laid upon these points in the Report, they are omitted from the Practical Conclusions. This is the more strange, as the Commission certainly proves that the circulatory apparatus is first influenced by the chloroform, and it is by vaso-motor paralysis that death is caused. Why, then, disregard it in administering the drug?

"As attention to the pulse is so easily managed without neglect of the respiration, and a proper knowledge of the state of the circulation has been proved to be most essential to the intelligent administration of an

anæsthetic, it is advisable that the pulse should always be observed; it can, at least, do no harm, and, in conjunction with the respiration, is a valuable help, quite apart from any information it gives of the general condition of the patient.

"The assistant in charge of the anæsthetic must endeavour to be more than a mere doler out of innocuous doses of chloroform; he should keep himself in touch with the whole condition of the patient all through the operation.[a] To endeavour to narrow his work to mere watching of the respiration is mistaken policy.

"In reference to the question of cardiac *versus* respiratory paralysis, the following remarks appeared in the *Lancet* for September 21, 1889:—

"'In the Scotch capital, failure of respiration is regarded as the chief or only danger; while in the metropolis, failure of the heart is more feared. It is quite possible that the surgeons in both cities are right, and that the habits or mode of living of the people may lead to differences in resisting power of the cardiac or respiratory apparatus respectively. The proportion of gouty patients is much larger in London than in Edinburgh, and when we consider that the natives of India appear to resemble the Scotch in their comparative immunity from cardiac paralysis by chloroform.' . . . . As most cases of death from chloroform are put down as due to cardiac paralysis, and this is said to rare in Scotland, the impression is conveyed that fatal cases of chloroform narcosis are unknown or rare in that country, and there is certainly an idea abroad to this effect. It is not necessary to resort to a comparison of the habits of the people to explain their immunity from fatal results.

"In Scotland fewer people die from chloroform, simply because fewer people inhale it. A population of 3,991,499 must necessarily give fewer chances for the administration of chloroform than one of 28,247,151 and consequently fewer possibility of fatal cases. Another point is, that such cases as do occur are not always, from the absence of coroners' inquests, brought to light, a large number, if not the majority, of the fatal chloroform cases in England, owing their publicity to the newspaper reports of the coroners' inquests.

"But deaths from chloroform *do* occur in Scotland and even in Edinburgh. A casual search in the medical journals gives the following figures: Edinburgh Royal Infirmary (1878 to 1880), three deaths; Western (Sir George Macleod's Hospital) Infirmary, Glasgow (1883 to 1885), three deaths; Royal Infirmary, Glasgow (1883 to 1885), two deaths; other parts of Scotland (1881 to 1883), six deaths. England, 110 deaths; Scotland, 14 in same period. England, population 28,247,151; Scotland, 3,991,499.

"In summing up the results of the latest Commission on chloroform it is to be remembered that, in the opinion of many persons, as regards the

[a] *Vide* Note by the Commission at the end of Mr. Wilson's article.

first part of their work—viz., the investigation of the point, does chloroform paralyse the heart? nothing new has been added to our knowledge.

"The result has been to confirm the work of some of the previous experimenters, but without explaining how the theory of cardiac paralysis appeared to be borne out by the experiments of Dr. Snow. There has always been since the discovery of chloroform sufficient evidence to prove that it is very difficult, if not impossible, to produce sudden cardiac paralysis by it in animals, and an equal amount of clinical evidence to justify the supposition that such can occur in man.

"To estimate the value and importance of the second part of the Report, it must be noticed that the action of chloroform on the heart was (by the advocates of this anæsthetic) considered to be the *only* objection to its general use. It was this supposed power of causing irremediable cardiac paralysis which made people afraid of it. If this property could be shown to be non-existent the harmlessness of the drug would be established.

"This is easily understood, from the facts that artificial respiration is so readily carried out, and cessation of respiration remedied by artificial respiration so common, that the impression is prevalent that it is easy to breathe for a person, but the remedying of the cessation of the heart-beat presents insuperable difficulties.

"It was not imagined that chloroform might possess other dangers—it is for a knowledge of these that we are indebted to the Commission—viz., the importance of the part played by vaso-motor paralysis in the causation of death, and the fact that the paralysis of the respiratory centre may be final at the moment that attention is drawn to the cessation of respiration.

"If the conclusions of the Commission are accepted in full without reserve, chloroform has no power of paralysing the heart; one danger is removed, but it is replaced by one as great in every respect—viz., paralysis of the vaso-motor centre. This may set in very suddenly, with hardly any warning; it is as far beyond treatment as cardiac paralysis, and it is as fatal. If the cardiac paralysis from chloroform does not exist, vaso-motor paralysis must have been the cause of the numerous deaths recorded against chloroform; and how sudden and irremediable this is the reports of fatal cases abundantly testify.

"When death occurs from vaso-motor paralysis it is clearly imaginable that the vaso-motor centre may be hopelessly damaged or rapidly reaching that stage, while the pulse is still present and the heart attempting to keep up the pressure. So that for some seconds there may be a deceptive condition in which both pulse and respiration are present, yet a fatal termination is imminent. That this death from vaso-motor paralysis does occur in man is shown by the very rapid running pulse mentioned in some cases as preceding the fatal termination.

"The extensive experiments of the Commission have left the chloroform question in the following condition: It was not found possible to directly paralyse or affect the heart by chloroform in some 600 administrations. Death from chloroform is due apparently to paralysis of the vaso-motor and respiratory centres—probably one or both of these may be affected. When death occurs it is the result of an overdose of the drug.

"It cannot be too strongly insisted that the work of the Commission gives us no greater confidence in chloroform than we had before. That it does not cause cardiac paralysis is no safeguard, since it produces as sudden and equally fatal vaso-motor paralysis, and respiratory paralysis in addition. Its physical and chemical properties remaining the same, the danger of permitting the patient to inhale an overdose will remain as great as ever.

"In the Practical Conclusions no directions are given for its administration beyond those which have been in use for years, and in the presence of which so many fatalities have occurred, either from vaso-motor, cardiac, or respiratory paralysis.

"In the face of these it is hardly to be expected that the deaths from chloroform will much diminish."

This by far the ablest adverse criticism of the work of the Commission gained weight from the scientific spirit in which the article had its genesis, the moderate language in which the objections were stated, and the recognised worth and high standing of the magazine in which the contribution appeared.

Fortunately the reply fell into the hands of one very familiar not alone with the working of the Committee but with the whole literature of the subject, and soon after Mr. Alexander Wilson's review appeared, Surgeon-Major Lawrie replied as follows:—

"In the *Medical Chronicle* of February, 1890, there is an ably-written review of the Hyderabad Commission's Report on 'Chloroform,' signed 'Alexander Wilson.' The review ends thus:—'Increased knowledge has added nothing new to the directions for its' [chloroform's] 'administration.' I hope that on consideration Mr. Wilson will see fit to modify this statement, which is inconsistent with fact.

"The Hyderabad Commission was appointed to confirm or disprove Syme's and Simpson's principles that we should be guided as to the effect of chloroform entirely by the respiration. The Commission has not only proved that these principles are sound, but has also proved that the art of administering chloroform with safety consists in keeping the breathing absolutely regular throughout the inhalation. This proof is new, and has never been established before. As far as I am aware there is no text-

book on surgery of the present day, except Sir Joseph Lister's article in 'Holmes's Surgery,' that does not recommend that the pulse as well as the respiration should be watched for signs of the effect of chloroform, and it is new to prove, as the Hyderabad Commission has proved, that to watch the pulse at all is both wrong and dangerous.

"The photograph of two original tracings of Experiment No. 186 which accompanies this paper demonstrates the futility of attention to the pulse in chloroform administration. For example, in Tracing III., Ludwig, though the pulse of the dog experimented on was apparently much better at 2 hours 55 minutes than at 2 hours 54 minutes, it was not really so. Dr. Gaskell has shown that when the blood-pressure is high the pulse must necessarily be better than when the blood-pressure is low. The pressure at 2 hours 54 minutes was much higher than at 2 hours 55 minutes, and the pulse was therefore in reality better in proportion, though it was smaller in the tracing.[a] On the other hand, the danger of waiting for signs in the pulse of failure of the heart under chloroform is well shown in the Tracing IV., Ludwig, at the end of which the failure of the pulse at 3 hours 19 minutes 15 seconds, was a sign of impending death.

"The two tracings demonstrate all that it is possible to know regarding the safe administration of chloroform, and are well worth careful examination. (Everything which occurred in the experiments was marked and recorded on the tracings as the drum revolved, and nothing except what is written in red ink[b] was added afterwards). The most remarkable points they exhibit are (*a*) the uniformly gradual and regular fall of blood-pressure which occurs when chloroform is administered in such a way that the breathing is perfectly regular, and (*b*) the entire absence of danger if the administration is stopped when the animal or patient is 'under.' Formerly we were told that chloroform lowers the blood-pressure; that this in itself shows that its administration is dangerous; and that occasionally the fall is so unexpected and capricious as to produce sudden death by stoppage of the heart. The Hyderabad Commission has shown (1) that the lowering of the blood-pressure, which chloroform and all anæsthetics cause when efficiently administered, is in itself a harmless event, if the respiration alone be attended to and taken as a guide, and if the administration be stopped when the patient is fully anæsthetised; and (2) that the sudden falls of pressure which the Glasgow Committee asserted are dangerous, and attributed to chloroform, are due to stimulation of the vagus, and, by slowing the circulation, are a safeguard against overdosing. The Hyderabad Commission has further proved that all irregularities in the fall of the blood-pressure and in the circulation under chloroform, including such an irregularity as dilatation

[a] This statement is open to correction.

[b] Black in the diagram.

of the heart, which never occurs when chloroform is administered properly, are due to improper administration, with irregular breathing and insufficient air.

"There is no loophole of escape for the opponents of principles which Syme long ago showed to be essential for safety in the administration of chloroform. Tracings 3 and 4 of Experiment No. 186 of March 6th, 1890, were not produced accidentally, but are examples of what happens in every case of chloroform inhalation without exception, whether in man or in animals, where the breathing is perfectly regular. Anyone who is taught to give chloroform in the right way can obtain the same sequence of events clinically, which the tracings pourtray experimentally; and I undertake to produce them invariably in any laboratory or operating room in the world. My students do it here every day, and if we can do it anybody can do it. The irregularities in the tracings of the Glasgow Committee, and Professor Macwilliam's more recent bogey of dilatation of the heart, are due to obstruction of the circulation in the lungs through interference with, or irregularity of, the respiration. The proof of this is furnished by the experimenters themselves. The Glasgow Committee state that in their experiments the anæsthetic was administered in a cloth, *saturated with chloroform*, held over the face—*i.e.*, with insufficient air. In Professor Macwilliam's experiments the chloroform was pumped into the lungs with bellows. Professor Macwilliam states that only a certain percentage of chloroform, 1 to 5 per cent., was allowed to get into the air in the experiments he performed in this manner. Before we can accept his conclusions, however, he is bound to demonstrate that air containing from 1 to 5 per cent. of chloroform, blown into the trachea with bellows, is incapable of producing obstruction of the circulation or respiration in the lungs. Obstructed circulation in the lungs and a rapidly falling blood-pressure are more than enough to account for the dilatation of the whole heart, which occurred in his experiments, and which he wrongly attributed to the direct action of chloroform. It is amusing to contrast Professor Macwilliam's statements regarding the danger of dilatation from the direct action of chloroform on the heart in the laboratory with Dr. James Dunlop's clinical experience, as narrated in the *Lancet* of September 27th, 1890, that in typical cases of death from the direct action of chloroform the heart is empty and flaccid. Perhaps Mr. Alexander Wilson will assert that Professor Macwilliam's statements 'are only a little fuller and more complete' than Dr. Dunlop's, and that they are 'not incompatible,' which is the view he takes of Erichsen's teaching that the pulse should always be taken as a guide, and Syme's teaching that it should never be taken as a guide in chloroform administration.

"I am satisfied to leave the question of chloroform administration to the judgment of the readers of the *Medical Chronicle*. I have always

understood that, next to saving life, the prevention and relief of pain are among the most important duties of our profession. According to the teaching of the Hyderabad Commission, pain may safely be prevented and relieved with chloroform by any intelligent and properly taught medical practitioner; and there can be no question that every medical man ought to be able to give a dose of chloroform with as much precision and certainty as a dose of morphine, or of any other poison. The practical outcome of the disastrous teaching of the Glasgow Committee, backed up by Professors Wood and Macwilliam, is that the relief of pain by chloroform is to be handed over to specialists, who alone are to administer it, though their own declarations and statistics show that they cannot give it with safety. Exactly in proportion as this teaching gains ground the bulk of the profession suffers loss in credit and in pocket, and the advantages chloroform confers are most seriously restricted and curtailed. There is no more necessity for the anæsthetist, with his inhaler and other apparatus, than for a hypodermic morphia injectionist, or other poisonist. If the anæsthetist is to be tolerated hereafter at all, it must be because he is a man of pleasant presence and cheerful countenance, who knows how to comfort and re-assure the patient until chloroform oblivion is secured."

Part IX. deals with clinical results. Since the completion of the experiments of the Commission a system of note-taking in chloroform administration has been in operation in the Afzulgunj Hospital.

In the first 272 cases in which an accurate record of chloroformisation was kept, the notes were taken by students. The average time to produce anæsthesia in these cases, which include children and adults, was 3m. 44s. In 82·9 per cent. abolition of the corneal reflex, in 16·8 per cent. stertorous breathing, and in 1 case complete relaxation of the muscles, was the first sign of full anæsthesia. "There was no instance of respiratory embarrassment or of accident or delay of any kind due to overdosing, and the patient was never allowed to inhale the anæsthetic while the breathing was in any way irregular."

The administration of chloroform in the Afzulgunj Hospital is now conducted in the following manner. When all is ready for the operation, the surgeon gives the signal to begin the inhalation, for which Surgeon-Major Lawrie gives the following rules:—

"(1) The chloroform should be given on absorbent cotton stitched into an open cone or cap.

"(2) To ensure regular breathing the patient, lying down, with everything loose about the neck, chest, and abdomen, should be made to blow

into the cone held a little distance from the face. The right distance throughout the inhalation is the nearest which does not cause struggling, or choking, or holding of the breath. Provided no choking or holding of the breath occurs, the cap should gradually be brought nearer to, and eventually may be held close over, the mouth and nose as insensibility deepens.

"(3) The administrator's sole object while producing anæsthesia is to keep the breathing regular. As long as the breathing is regular, and the patient is not compelled to gasp in chloroform at an abnormal rate, there is absolutely no danger whatever in pushing the anæsthetic till full anæsthesia is produced.

"(4) Irregularity of the breathing is generally caused by insufficient air, which makes the patient struggle or choke or hold his breath. There is little or no tendency to either of these untoward events if sufficient air is given with the chloroform. If they do occur the cap must be removed and the patient must be allowed to take a breath of fresh air before the administration is proceeded with.

"(5) Full anæsthesia is estimated by insensibility of the cornea. It is also indicated by stertorous breathing, or by complete relaxation of the muscles. Directly the cornea becomes insensitive, or the breathing becomes stertorous, the inhalation should be stopped. The breathing may become stertorous while the cornea is still sensitive. The rule to stop the inhalation should, notwithstanding, be rigidly enforced, and it will be found that the cornea always becomes insensitive within a few seconds afterwards.

"It is only necessary to add that the patient should be so dressed for an operation that his respiratory movements can be seen easily by the chloroformist. In the climate of India this is not difficult to manage, but it is difficult to manage in the climate of Europe; so that in this respect, and in this respect alone, the chloroformist in England is placed at a distinct disadvantage compared with the chloroformist in India. Proceeding in the above way chloroform never produces any bad effects, and its administration, in any case which is fit for an operation, is entirely free from danger."

And the following Practical Conclusions are given at page 395:—

"I. The recumbent position on the back and absolute freedom of respiration are essential.

"II. If during an operation the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there is any doubt whatever about the state of respiration, the patient should be at once restored to the recumbent position on the back.

"III. To ensure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest, or abdomen, is to be strictly avoided; and no assistants or by-standers should be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If struggling does occur, it is always possible to hold the patient down by pressure on the shoulders, pelvis, or legs without doing anything which can by any possibility interfere with the free movements of respiration.

"IV. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

"V. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting struggling, or holding the breath. If struggling or holding the breath do occur, great care is necessary to avoid an overdose during the deep inspirations which follow. When quiet breathing is ensured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face; and all that is then necessary is to watch the cornea and to see that the respiration is not interfered with.

"VI. In children, crying ensures free admission of chloroform into the lungs; but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, they should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In any struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anæsthesia, and this may only appear or may deepen after the chloroform is stopped (*vide supra* sub-paragraphs 2 and 9 of Conclusions in paragraph 30). Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

"VII. The patient is, as a rule, anæsthetised and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anæsthetic should never, under any circumstances, be pushed till the respiration stops; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations and not be allowed to come out and renew the stage of struggling and resistance.

"VIII. As a rule, no operation should be commenced until the patient is fully under the influence of anæsthetic, so as to avoid all chance of death from surgical shock or fright.

"IX. The administrator should be guided as to the effect entirely by the respiration. His only object, while producing anæsthesia, is to see that the respiration is not interfered with.

"X. If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be seen by the administrator. If anything interferes with the respiration in any way, however slightly, even if this occurs at the very commencement of the administration, if breath is held, or if there is stertor, the inhalation should be stopped until the breathing is natural again. This may sometimes create delay and inconvenience with inexperienced administrators, but experience will make any administrator so familiar with the respiratory functions under chloroform that he will, in a short time, know almost by intuition whether anything is going wrong, and be able to put it right without delay before any danger arises.

"XI. If the breathing becomes embarrassed, the lower jaw should be pulled, or pushed from behind the angles, forward, so that the lower teeth protrude in front of the upper. This raises the epiglottis and frees the larynx. At the same time, it is well to assist the respiration artificially until the embarrassment passes off.

"XII. If by any accident the respiration stops, artificial respiration should be commenced at once, while an assistant lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls. Artificial respiration should be continued until there is no doubt whatever that natural respiration is completely re-established.

"XIII. A small dose of morphia may be injected subcutaneously before chloroform inhalation as it helps to keep the patient in a state of anæsthesia in prolonged operations. There is nothing to show that atropine does any good in connection with the administration of chloroform and it may do a very great deal of harm.

"XIV. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation."

While the inhalation is proceeding no one is allowed to do anything in the operating room, not even speak, and everybody's attention is thus concentrated on the administration until the patient is fully anæsthetised. From the moment the inhalation is commenced until anæsthesia is produced, the surgeon records every event, even of the most trivial kind, with the exact time of its occurence.

To these excellent directions Surgeon-Major Lawrie adds the

following statement, which we would like to see illuminated and hung in every operating room:—

"Normal respiration is compatible with normal inhalation and normal anæsthesia."

As an example of the note-taking during chloroformisation we give the following case:—

"August 24th, 1891.—No. 279.

"Temperature of room 73·1° F. Healthy Hindoo male, Kissensingh, ætat. 40. Disease—necrosis of the lower jaw. Operation—removal of dead bone. Chloroformed by student Krishtiah at 8h. 52m. 0s. Full anæsthesia at 8h. 59m. 55s.; the administration was slow on account of bleeding into the mouth. (A probe had been introduced into the sinus before the operation was decided on).

"*Observations.*

	H.	M.	S.	
"A.	8	52	0.	—Chloroform on cap; blowing regularly.
"B.	8	53	5.	—Cap brought close to face.
"C.	8	54	30.	—More chloroform; two breaths of fresh air.
"D.	8	55	40.	—Noisy expiration.
"E.	8	56	20.	—Coughing violently; one breath of fresh air.
"F.	8	57	20.	—More chloroform on cap; two breaths of fresh air.
"G.	8	59	55.	—Cornea insensitive; administration continued till 9h. 4m. 55s."

We have devoted an unusually large amount of space to the notice of this great work, which is at once one of the most practically useful and scientifically accurate of modern medicine. It commands respect from all readers, both for its originality and for the painstaking and trustworthy record which it contains of the numerous, well-devised, and instructive experiments which the able scientists of the Commission so successfully carried out.

That the Commission has rehabilitated chloroform in the good opinion of the medical profession is known to all, but we venture to say it has done much more—it has placed the value of chloroform on a scientific basis, firm as the everlasting hills.

George Foy.

Text-book of the Principles and Practice of Medicine. By the late CHARLES HILTON-FAGGE, M.D., F.R.C.P., Physician to, and Lecturer on Pathology in, Guy's Hospital; Examiner in Medicine in the University of London; and PHILIP HENRY PYE-SMITH, M.D., F.R.S., Fellow of the Royal College of Physicians; Physician to, and Lecturer on Medicine in, Guy's Hospital. Third Edition. London: J. & A. Churchill. 1891. 8vo. Vol. I., pp. 1186. Vol. II., pp. 1023.

THE posthumous first edition of Dr. Hilton-Fagge's great work was reviewed at length in the number of this journal for January, 1887 (Vol. LXXXIII. No. 181. Third Series, page 84). A second edition was published in 1888, in which large additions were made to the sections in the second volume on Diseases of the Heart, Pneumonia, Intestinal Obstruction, Diseases of the Liver, Anæmia, and Diseases of the Joints. At the same time, in the first volume, chapters were added, or re-written, on Pyæmia, Enteric Fever, Febricula, Vaccinia, Rubeola (Rötheln), Actinomycosis, Peripheral Neuritis, Friedreich's and Thomsen's Diseases, Insular Sclerosis, and Insanity—this last chapter being written by Dr. G. H. Savage.

The present, or third, edition saw the light in July, 1891, and should long since have been reviewed in our pages. For the delay we tender an apology to Dr. Pye-Smith, whose name and fame are now more than ever identified with this splendid and classical work. In his preface he indicates the chief alterations in the new edition. The introduction has been re-written. The treatment of enteric fever and of diphtheria, and the pathology of cholera and ague, have been considerably expanded. The chapters on diseases of the heart have been revised and, in great part, re-written. The chapter on phthisis has been in parts condensed, in others expanded. "It had been already sent to press some time before the publication (at once, too late and too early) of the method of treatment by inoculation, introduced by the eminent discoverer of the essential nature of this disease, as well as (in all probability) of that of cholera." It is naïvely added: "The circumstances, however, of the announcement and practice of this method were such, and the disappointment of the hopes at first existed [? excited—ED.] has been so great, that the omission is, perhaps, not to be regretted."

The accounts given of influenza, diabetes, and anæmia, have

in particular been brought up to date. As regards influenza, we are, however, surprised to find it still described under the heading, "Catarrhal Disorders of the Air Passages," in company with coryza, ozæna, hay fever, whooping-cough, and asthma. Surely, influenza, at all events, would more fitly find its place among the specific infectious diseases, "affecting the whole body and accompanied by fever." The specificity of whooping-cough also admits of no question, and is, indeed, fully acknowledged by the authors when they write: "The *incubation* of whooping-cough after infection is, perhaps, variable—probably a fortnight as a rule, but often less."

One of the distinctive features of this great work is the introduction into both volumes of very full indexes of both subjects and authors. This is a convenience of the first importance to the reader. Another innovation of more questionable utility and taste is the superscription of each chapter with a classical or poetical quotation. In some instances, no doubt, these quotations are thoroughly appropriate—for example, in the chapter on "Inflammation," where the definition of Celsus is given—"Notæ vero inflammationis sunt quatuor: rubor et tumor, cum calore et dolore." Sometimes, however, the quotation excites a sense of the ridiculous, as when we read, under "Varicella," Dryden's lines:

> "Each little pimple had a tear in it,
> To wail the fault its rising did commit;"

or, under "Chronic Deep Inflammations and Hypertrophies" of the skin, from Shakspeare's *Henry V.*:

> "His face is all bubuckles and welks and knobs and flames of fire."

That Dr. Pye-Smith is a classical scholar there can be no doubt, and besides the many apt quotations at the heads of chapters, there are occasional instructive footnotes of great value. One of these may here be reproduced—"*Πλευρῖτις* sc. *νόσος*, *i.e.*, the 'side-complaint,' the stitch in the ribs. The adjectival termination, *ιτις*, has been taken from this word and from *φρενῖτις* to denote inflammation, and has thus been used to form peritonitis, nephritis, orchitis, and so on." This is quite correct, for *φρενῖτις* (*gen.* *φρενίτιδος*) is properly a feminine adjective. Thus, in Plutarch, we find the full expression; *ἡ φρενῖτις νόσος*, *a disease of the mind.*

It would be idle to attempt to analyse in detail the contents

of this great work, which runs to considerably more than 2,000 pages. We can but reiterate the opinion expressed in our notice of the first edition, that the work is an English classic, which will establish the reputation for all time of Dr. Hilton-Fagge as a physician, an original thinker, and a close and accurate observer. That the intrinsic merit of his text-book has not suffered at the hands of Dr. Pye-Smith will be manifest from the reference in this review to the changes he has made in the present edition.

Atlas of Clinical Medicine. By BYROM BRAMWELL, M.D., F.R.C.P., Edin.; F.R.S., Edin.; Assistant Physician to the Edinburgh Royal Infirmary, &c., &c. Volume I. Part IV. Edinburgh: T. and A. Constable. 1892. Folio.

TRUE to his promise, Dr. Byrom Bramwell gave to the medical world the fourth and concluding part of the first volume of his magnificent work on the morrow of May Day, 1892. It is fully up to the high standard of excellence already attained by the author in the previous parts.

Included in the present fasciculus of the Atlas is a monograph on smallpox, which runs to 29 large folio pages, and is illustrated by temperature charts, a plate containing nine beautifully finished and coloured drawings of the eruptions of smallpox and vaccina, and three plain lithographs of smallpox eruption and its results. This monograph gives a truthful description of smallpox and its varieties, the diagnosis, prognosis, and treatment of the disease. Figure 6 in Plate XXI. purports to be a drawing of hæmorrhagic smallpox, but is really one of *variola hæmorrhagica pustulosa* of Curschmann. In this variety, the purpuric or hæmorrhagic tendency does not appear until a late stage, when the pustules are already formed. In ordinary variola hæmorrhagica (the *purpura variolosa* of Curschmann) the purpuric or hæmorrhagic tendency shows itself—it may be—from the outset, and may indefinitely postpone the development of the pustular eruption.

The other principal contribution to this Part is a remarkable case of globulinuria in a literary man, aged forty-seven, in which an enormous quantity of mixed proteids was daily passed in the urine, and crystals of globulin were deposited, usually only after standing for several weeks, but on two occasions within twenty-four hours after the urine was passed.

Besides the foregoing monographs, this fasciculus contains

notes of three new cases of Friedreich's ataxia and a description of a series of cases of insanity—melancholia, mania (hilarious and furious) and pantophobia—wrongly spelled *panaphobia* by Sir Alexander Morison in his collection of Portraits of the Insane—the term meaning delusive fear of every object and person.

There is a copious index, also a title page, table of contents, and list of illustrations.

We have much pleasure in congratulating Dr. Byrom Bramwell on the successful completion of the first volume of this important work, the second volume of which is promised to be issued in three instead of four fasciculi—to be published on September 1, 1892, January 1, 1893, and May 1, 1893.

Lectures on Diseases of the Digestive Organs. Vol. I. *Lectures on Digestion.* By Dr. C. A. EWALD, Professor in the University, and Physician to the Augusta Hospital, Berlin. Translated from the latest German Edition, by ROBERT SAUNDBY, M.D.; F.R.C.P. London: The New Sydenham Society. 1891. Pp. 214.

THIS volume contains twelve very complete and learned lectures on the physiology of digestion. The subject is treated in all its branches, and the latest views are mentioned.

We have studied this book very carefully, but regret to have to say that we are much disappointed with it. We found it ill-arranged, and exceedingly heavy reading. It is a very learned work; but it reminds us somewhat of a tangled forest, through which the traveller is at great pains to find his way.

In justice, however, to Professor Ewald, we must say that this obscurity is by no means altogether due to him. The book has been very badly translated. Dr. Saundby seems in many places to have taken as his model of style those keys to the classics in which the English equivalent of the original language is printed word for word. This idea has led him to give us some phrases which we can hardly call English at all. Thus, on page 5 we read:—"We have not now to examine closely the fate of nutriment which has passed into the juices and tissues of the body, *and the nearly related but not now in question subject* of tissue change, in which assuredly the inorganic matter plays a very important part; but we must learn the necessary preliminary steps, *that is*, the proceedings by which the organism

converts various food stuffs into absorbable material.' [The italics are ours.] This is a beautiful sentence; we have met with others in the work which are almost as attractive.

We wonder what is the meaning of the following description of the salivary glands :—"The blood-vessels ramify in a delicate network over the acini, and are separated by the alveolar wall from the lymph spaces, which are more or less full, according to the physiological condition of the gland, and the capillaries are thereby separated more or less from the wall of the acinus." To our ignorance it seems to say that the alveolar wall separates the blood-vessels from the lymph spaces, and the lymph spaces separate the capillaries from the wall of the acinus. Now, an acinus and an alveolus mean the same thing, and the description seems obscure.

We do not know whether we have to thank Prof. Ewald or Dr. Saundby for the eminently incorrect chemical notation and nomenclature. Hydrocyanic acid is represented by CONH. We read of amidocapronic acid; on page 76 we find the hitherto undescribed salt, Ca_3PO_4; and on p. 85 we find a hot saturated carbonate of baryta solution.

When a second edition comes to be published, we hope the translation may be re-written from beginning to end.

The Action of Water on Lead: being an Inquiry into the Cause and Mode of the Action and its Prevention. By JOHN HENRY GARRETT, M.D.; Diplomate in Public Health, Durham and Cambridge, &c. London: H. K. Lewis. 1891. Pp. 116.

THIS little book contains an account of the very careful experiments made by Dr. Garrett in order to elucidate the action of various kinds of water on lead—a subject which is by no means clearly understood. The experiments are described in detail, so that any chemist who is interested in the subject will be in a position to repeat them.

With regard to the prevention of the solution of lead in water, the author believes that the best method consists in the addition of some alkaline carbonate to the water, and suggests the use for this purpose of carbonate of lime, as he finds that a solution of this salt containing two grains in the gallon has no action on lead. The book is well worthy of the study of all interested in the subject.

PART III.

SPECIAL REPORTS.

REPORT ON THE PROGRESS OF SURGERY.

By R. Glasgow Patteson, M.B., Univ. Dubl.; Fellow and Member of the Court of Examiners, R.C.S.I.; Surgeon to St. Vincent's Hospital.

(*Continued from page 416*).

IV.—LIGATURE AND EXCISION OF INTERNAL JUGULAR VEIN.

This operation, first practised by Mr. Arbuthnot Lane, though previously recommended by Mr. Victor Horsley in cases of pyæmia due to septic thrombosis of the lateral sinus secondary to chronic disease of the middle ear or mastoid antrum, has now become so firmly established as a recognised surgical procedure that nothing need be said as to the grounds for its performance or the cases in which it is indicated. It is sufficient to say that in every case of chronic otitis media in which symptoms of pyæmia develop, as shown by repeated rigors and rises of temperature, to 105° or 107° F., combined with swelling and tenderness down along the anterior border of the sterno-mastoid muscle, the lateral sinus should, without hesitation, be explored, and the jugular vein ligatured and excised if necessary. Mr. Rushton Parker, in the *Liverpool Medico-Chirurgical Journal*, No. 22, Jan., 1892, has recorded two cases, one of which we quote at some length on account of the points of interest involved. The patient was twenty-five years of age. When a lad of fourteen he got kicked on the left side of the head, and had a bleeding from the ear, which gave rise to no permanent damage except a tendency to a slight discharge on catching cold. The present attack came on suddenly. There was "almost entire deafness of the left ear, from which fœtid pus was issuing." There was no swelling or tenderness over the mastoid region, but there were "swelling and tenderness of the neck just below." Double optic neuritis, more marked on the right than on the left side, was present. Rigors were frequent; evening tem-

perature, 105°; in the morning, 102° F. His condition getting worse, it was decided to explore the jugular vein. "The vein was found firmly plugged from the base of the skull to below the junction with the facial trunk. Both veins were cut between two ligatures in their healthy parts, and their plugged portion detached from its bed, with a crop of swollen lymph glands covering the upper part of the jugular. The mastoid region was opened with a gouge and mallet behind the ear, emitting an excessively fœtid odour, and revealing the interior of the lateral sinus occupied by green purulent lymph, and the tail end of a purple blood clot, thickening downwards. The detached jugular was opened, and found to be lined with gray membranous lymph, surrounding a firm plug of purple blood clot, partly softened and puriform within. This portion, about two inches or more in length, was cut away, leaving below the skull about an inch, the lymphy lining of which was scraped away, after which the passage upwards to the lateral sinus was well irrigated with perchloride of mercury solution. The sinus was partly scraped, and in probing upwards blood flowed freely, but was quickly stopped with a plug of antiseptic wax."[a] Two days later the temperature rose again, the patient was put under chloroform and the wound opened up. The plug of wax was removed. "Behind the wax plug fœtid pus had collected; and from the antrum a small quantity of cheesy material was removed, the small mastoid cells opened, and the way made free for washing throughout this dangerous annex to the middle ear." The patient made an uninterrupted recovery after this second operation. In the second case the patient—a boy aged seven—died three days after the operation, "with symptoms suggestive of meningitis." No account is given of a *post-mortem* examination.

The success of Mr. Parker's first case, in spite of great surgical dangers and the late period of the illness when the patient applied for treatment—after symptoms of pyæmia were fully developed—ought to convince the most sceptical of the splendid addition this procedure has made to surgical therapeusis, and to warn the timid and vacillating that on their heads will lie the death of those cases which are not sufficiently early entrusted to operation. Mr. Parker reproduces a useful diagram of Mr. Ballance's, showing the different

[a] A better method of stopping the flow of blood from any of the cranial sinuses is by the simple invagination of the torn walls with gentle pressure, or if that is not possible, by the introduction of a few coiled strands of fine carbolised ligature gut. For the formula of this antiseptic wax, *vide supra.*

openings required for the various procedures and their relations; and most surgeons will, we think, agree with the preference which he expresses for the gouge over the obsolete trephine in dealing with the lateral sinus and its neighbourhood.

V.—ENUCLEATION IN THE TREATMENT OF GOÎTRE.

In the *Revue de Chirurgie*, Sept., 1891, Tom. XI., No. 9, M. Hache details a case in which he removed from the neck of a child, aged 13, a tumour as large as a goose egg, which, with the exception of a small cyst ruptured in extraction, was of a solid homogeneous character, presenting the features of a parenchymatous goître. The child made a rapid recovery, and six months later no enlargement of the thyroid could be felt. As regards the steps of the operation, a median vertical incision was made, and then passing down in the gap between the sterno-thyroid muscles the enlarged thyroid body was met with, at once presenting its normal colour and consistence. It was cautiously incised, and just below the surface from which it was separated by a thin layer of gland tissue lay the new growth. Enucleation and the remaining steps of the operation were mostly done with the fingers. The bleeding was slight, three pressure forceps being sufficient to check it, and no ligatures being required. In conclusion, M. Hache puts enucleation in the front rank of treatment—"Its efficacy, its extreme simplicity, and the entire absence of any anxiety as to the occurrence of cachexia strumipriva lead one to employ it without hesitation in place of trying interstitial injections of tincture of iodine—a method that, often uncertain [and we might add, generally *useless*], is always slow in dealing with tumours of such a size." It is a matter of congratulation that a method of treatment has been found which offers hopes of relieving sufferers from this condition without endangering their health, for it is now firmly established that extirpation has this unhappy sequel. The supervention of a condition allied to myxœdema is so real and so deterrent a danger in total removal of the thyroid body that we consider this operation justifiable in none but the extremest cases, where the mechanical effects of the growth are a constant and an uncontrollable menace to life.

In the same journal, *Revue de Chirurgie*, No. 3, Mars, 1892, Prof. A. Reverdin, of Geneva, publishes a paper on this subject. He gives in tabular form the results of 14 cases in which he has operated, with 1 fatal issue. Of these, 9 occurred in women. In

10, the tumour was on the right side; in 2, median; and in 2 on the left side. In 5 cases the enlargement was of a parenchymatous nature; in 6, cystic; and in 3, adenomatous. In 7 cases partial extirpation was practised; in 7, enucleation. The one death occurred in the former category, and in it collapse of the trachea from pressure-absorption rendered tracheotomy necessary a few hours after the operation, and four days later the patient sank from pulmonary congestion. M. Reverdin is by no means an advocate for wholesale operative measures. He has obtained good results from the employment of iodoform internally—one grain three times daily in a pill. The formula he employs is:—

℞. Iodoforme - - 2 grammes.
Extrait d'absinthe Q. S. pour 30 pilules.
D. S. - - 3 pilules par jour.

This acts beneficially not only on those enlargements which occasionally follow uterine troubles or childbirth, but in cases where the gland is really degenerated, in true cases of goître. In all cases it appears to exert a direct influence on the healthy tissue of the gland—causing a diminution in size—rather than on the new growth itself. Though this at first sight seems rather an undesirable than a beneficial action, still no evil results have apparently followed. The indications for operative interference are thus stated by the author:—"*When iodoform, or any other treatment considered efficacious, has been fully tried, and there is, notwithstanding, an increase in the symptoms; gradual but continual enlargement of the gland, persistence or aggravation of the pain, and interference with the respiration; then operative intervention is indicated.*" To the question, "What form is this operative intervention to take?" Prof. Reverdin gives an unhesitating reply—In all cases where it is possible, *enucleation*; and "we must insist on the fact that the further we progress the more clearly we see that enucleation is the true method, and that its application is much easier than was at first sight apparent." The thyroid tissue must be carefully laid bare, gradually and slowly incised layer by layer, and at a variable depth from the surface, according to the author, the tumour proper will be exposed to view. "*So long as you are doubtful you are not on the growth,*" which will be immediately recognised by its brownish-gray colour and its smoother surface. The incision must then be enlarged, and now, with the aid preferably of the finger, the tumour is rapidly enucleated out of the bed of the thyroid tissue in which it is lying,

and to the walls of which it is at times adherent. Rapidity is here the order of the day, for it is now the hæmorrhage, often alarming, begins, and till the growth is removed it cannot be mastered. Fatal results from this method M. Reverdin has not yet met with, and he strongly urges two other points in its favour—rapidity of performance and rapidity of healing. In his 7 cases of partial extirpation the average duration of the operation was 62 minutes, and of the healing 14 days; while in an equal number of enucleations the respective durations were—26 minutes, and less than 7 days. In conclusion, two axioms are formulated—1. The surgeon ought above all things to endeavour to perform enucleation; 2. If he succeeds he will cure his patients more surely and more rapidly, he will leave less visible traces of his handiwork, and above all he will save them from the misery of operative myxœdema.

VI.—TREATMENT OF SUPPURATIVE CHOLECYSTITIS.

In the *Berliner klin. Wochenschr.*, No. 11, 1892, H. Lindner records a case (one of four operations on the gall-bladder) which presents features of unusual surgical interest. The patient was a woman, twenty-eight years of age, who some time previously had suffered from perityphlitis, which had yielded to treatment. She now had a train of symptoms which pointed to suppuration of the gall-bladder. Accordingly an incision was made along the outer edge of the right rectus muscle, and the gall-bladder exposed. It was found enormously distended, and on incising it a large quantity of pus and a fair-sized calculus escaped. It was fixed to the abdominal wall, thoroughly washed out and drained. In a few days the discharge of pus gave place to a discharge of bile, and the patient made a speedy recovery, leaving the hospital at the end of five weeks. She still had a biliary fistula. Three months later she returned with the colic and other symptoms as bad as before. The fistula still discharged bile. On enlarging the opening the finger passed into a canal which extended upwards and backwards in the direction of the liver and ended in a *cul-de-sac*. Here a calculus was felt, separated from the canal by a membrane, which was apparently the thickened wall of the bladder. The liver and gall-bladder were exposed by an abdominal incision, and it was then found that the latter was divided into two compartments by a band of cicatrical tissue, and that the return of the trouble was caused by the impaction of the calculus

in the opening of communication between the two compartments. The stone was removed with great difficulty, but the patient made an excellent recovery with subsequent closure of the biliary fistula. The case illustrates the difficulties that beset diagnosis, and the care that should be exercised in exploring the bladder at the time of operation.

VII.—SURGICAL TREATMENT OF HEPATIC ABSCESS.

At the meeting of the Paris Société de Chirurgie, 13th Jan., 1892, M. Fontan brought forward two cases of abscess of the liver which he had treated by free incision and curetting, basing his mode of treatment on the grounds that incision and irrigation were insufficient to remove the shreds of gangrenous tissue which were often left adherent to the walls of the abscess cavity, and which, by keeping up prolonged suppuration, wore out the patient's strength before they became cast off. The scraping was gently done with a blunt curette, the left index finger acting as a guide, and was accompanied by only slight bleeding. In the discussion which followed, M. Pozzi remarked that he had seen this method practised in Egypt and Athens, and that it possessed the advantage of exposing, and causing the evacuation of, a second abscess which might have been overlooked. At the same time he did not consider this advantage to outweigh the risks of the procedure—hæmorrhage and the opening of the biliary ducts. M. Monod condemned the practice as not only dangerous but useless, and quoted cases in support of his views.

The second case is of much interest as bearing on the diagnosis of multiple abscesses, that bane of operating surgeons. A patient just returned from Cochin China presented all the symptoms of abscess of the liver. Three exploratory punctures gave no result; a final one, however, in the sixth costal interspace showed pus. A large incision was made, the rib resected, and free drainage provided. Marked improvement followed, but was of short duration. The temperature again became high, the diarrhœa became profuse, the cachexia became more marked, and six weeks after the operation the patient died. At the autopsy it was found that the abscess which had been incised and drained had completely collapsed, but that two others—one on the upper surface of the liver, and one on the lower—had escaped the knife. Hence the fatal result.

In this connection we may refer to a case published by Mr. F.

T. Heuston in the *British Medical Journal*, April 2nd, 1892, and brought by him before the Dublin Biological Club. The patient, twenty-seven years of age, had served as a clerk to the Imperial British East African Company for some months near Zanzibar. He was attacked by remittent fever, and invalided to Aden. After recruiting there he returned to Mombaza, only to again fall a prey to fever, and he was shortly afterwards invalided home. This was in September, 1890. He obtained employment at home, and for about a year was able to perform his duties, when he had to resign. In December, 1891, he came under observation. "His liver was greatly enlarged, giving rise to bulging out of the ribs and fulness in the epigastrium. He complained of dull aching pain in the hepatic and right iliac regions, also of tenderness below the costal arch, chiefly in the epigastric region." An operation was performed, and twenty ounces of pus first removed by the aspirator, followed by incision and the withdrawal of about three pints more. Rapid improvement followed, and the sac of the abscess seemed closing when a recurrence of the symptoms took place, and a swelling was detected to the left of the median line in the epigastrium. A further incision was made, the liver found adherent to the parietes, and an abscess containing a pint of pus opened. Improvement again followed the operation, but subsequently the patient's strength failed, and he died eight days after the operation. The autopsy showed marked contraction of the cavities which had been drained—in fact, they were fast approaching obliteration—but posteriorly in each lobe a large abscess was found "entirely out of reach of operative interference."

The question raised by these cases in which the liver is riddled with multiple abscesses is one of the gravest that can be placed before the surgeon for solution. One important fact seems to be now established by a sufficient number of observations, and that is, that a renewed aggravation of symptoms after the evacuation of a hepatic abscess points to increased activity in another focus of suppuration, probably roused into increased action by the reduction of general tension following the operation, and requiring immediate and further operative interference. Judged in the light of these and similar cases, it would appear as if M. Fontan's proposition of curetting the interior of liver abscesses might be a valuable aid to the diagnosis of multiple abscesses, and we think if such a measure were gently done with the flushing gouges

introduced by Mr. Barker for the treatment of psoas abscess, used with a continuous stream of hot water, that the risk of hæmorrhage at all likely to prove fatal would be reduced to zero. Further, now that experience has taught us that the failures in the majority of these cases are due to undetected abscesses, we fail to see why the methods adopted in dealing with other organs should not be adopted here. Is the liver more sacred than the kidney or the brain? Yet we probe these organs with trocar and grooved needle without ill result: why not the liver? Is the liver the last place of the "microcosm of man" of which we must speak with bated breath, owning that within it dwells a veritable fetish, and that it alone remains holy ground?

VIII.—INTERMITTENT HYDRONEPHROSIS.

Messieurs Terrier and Baudouin have published in successive numbers of the *Revue de Chirurgie* (September, October, and December, 1891) a series of articles on this interesting pathological condition and its surgical treatment, which, taken together, constitute a complete monograph on a subject hitherto but slightly touched on in any of the larger and recognised authorities. A careful analysis in tabular form of 83 cases—all as yet recorded—forms the basis of their communication. As the result of these studies the authors have arrived at certain very definite conclusions, some of which we here quote as they are of interest as well as of practical bearing. This form of hydronephrosis—intermittent—only recognised in recent years, is much more common than is generally supposed, and is often the earlier stage of a permanent condition. This clinical variety may be produced by many various conditions: in by far the largest number it is a complication of *renal displacement.* It is found more frequently in women, and has a predilection for the right side in the female and for the left in the male. It is sometimes due to a calculus impacted in the pelvis of the ureter, or may be the result of compression or of temporary obliteration of the lower portion of the ureter. In a few cases it is congenital. The method of its production in cases of floating kidney has been studied in experiments and in the facts of morbid anatomy. When displacement of the kidney occurs, a kinking of the ureter, with or without torsion, follows, accompanied by a temporary arrest of the evacuation of the urine and gradual formation of a hydronephrotic pouch, which empties itself when the kidney returns to its normal position. This

interference with the circulation leads to inflammatory changes in the neighbourhood of the pelvis or in the mucous membrane of the pelvis itself, as a result of which fibrous bands of adhesions may form between the sac and the upper part of the ureter, and may end by converting an intermittent into a permanent hydronephrosis. These alternating periods of fulness and emptiness of the pelvis, consequent upon the transitory obliteration of the ureter, manifest themselves clinically by *paroxysms of pain*, which occurring generally every month, and sometimes oftener, and following on a period of health more or less perfect, are almost characteristic of the affection. These paroxysms present three phases—onset, climax, and terminal phase—which are characterised by pain, always severe and sometimes almost intolerable, and by the coincident appearance of a tumour—fluid but rarely giving rise to fluctuation—which is generally seated in the right loin, and is synchronous with a marked diminution in the quantity of urine passed. These are the results of the sudden kinking of the ureter which follows the displacement of a floating kidney. Each attack lasts for some hours, coming to a sudden termination when the kidney regains its normal position. The pain and swelling disappear, and there is a copious evacuation of urine, consequent on the emptying of the pelvis. Those cases which have been hitherto described as instances of *acute strangulation of floating kidneys* are in reality only an early stage of the condition of intermittent hydronephrosis.

In many of these cases the question of treatment does not arise. The attack lasts a day or two, and with the evacuation of the pelvic accumulation of urine all trouble ceases, and months of absolute comfort may succeed. But where the pain is excessive in degree, and the periods of intermission short, so that the patient is being rapidly worn out by the constant strain and loss of repose, then the question of operative treatment becomes of paramount importance. Moreover, the danger of a septic infection of the retained fluid, with the consequences of an infective pyelonephritis, must always be present in the mind of the surgeon, and adds enormously to the gravity of the case. Hence, in early stages, *nephropexy*—or the fixation of the kidney to the abdominal wall—offers the best chance of success. But when the tumour is large and increasing in size more radical measures are needed, and especially if both kidneys are affected, the most promising measure is incision and drainage of the pelvis on the side which is

most engaged, with the view of establishing a *pelvic fistula*. But in other cases, when one kidney still remains sound, it is better to have immediate recourse to *nephrectomy*. It entails less suffering on the patient, and holds out better hopes of success, than the establishing of a urinary fistula, as many of these cases have required the subsequent performance of a secondary nephrectomy under conditions much less favourable for the surgeon and for the patient.

As regards the operation of *nephropexy*—the name preferred by the authors instead of *nephrorraphy*, that given to it by its originator, Hahn—the kidney is exposed by a lumbar incision in the usual way, and fixed from above downwards by sutures of silk, which penetrate into the kidney-substance as well as the capsule, and are then passed through the aponeurosis of the quadratus lumborum. Mr. Morris, we may here remark, uses kangaroo tendon, and Mr. Treves silkworm-gut sutures, as Dr. Newman found the absorption of catgut to be more rapid in the kidney than in any of the other tissues. The authors entirely condemn the palliative treatment by suspensory bandages and trusses, not only as being useless, even when well applied, which is seldom, but also as allowing the condition to progressively develop, thus adding to the difficulties of future surgical interference. Aspiration of the tumour or the establishment of a lumbar urinary fistula are equally condemned; but a urinary fistula may be, in certain cases, established by lateral laparotomy, incision of the pelvis, and stitching of its walls to the abdominal opening after the manner of dealing with hydatid cysts. This incision allows the extirpation of the kidney at the same time if found necessary.

IX.—SPINAL SURGERY.

The attention of surgeons has recently been drawn largely in this direction, and the brilliant results which have, in a few cases, been already attained seem to hold out the hope that, with larger experience and improved methods, the spinal canal and its contents will come within the legitimate range of practical surgery. In an important paper in the *Revue de Chirurgie*, T. XI., No. 7, 1891, M. Chipault deals with some new facts in connection with the surgery of Pott's caries, his first case being an example of a further adaptation of Mr. Treves' operation for lumbar abscess by direct incision and drainage. In this case—a boy aged nine years—no abscess could be detected, but there was severe sciatic

pain in the left side, considerable lordosis from contracture of the sacro-lumbar muscles, pain on pressing over the left transverse processes of the three lower lumbar vertebræ, and also marked tenderness on palpation of their bodies through the flaccid and emaciated abdominal wall. The diagnosis was tubercular caries of the bodies of the vertebræ with extension on the left side compressing the roots of the sciatic nerve. At the operation large fungous masses of tubercular tissue were found extending from the diseased bodies and compressing the nerves at the foramina of exit. These and the softened parts of the bodies were curetted away carefully, and in the anterior part of the cavity thus left the aorta could be felt distinctly pulsating. The operation was almost bloodless. A drain was passed across the vertebral cavity, coming out at the most dependent part of the wound. It was removed at the first dressing, and the wound was found completely healed at the second (the dates are not given). On the 15th day the pain and lumbar contracture had completely disappeared. In this case, to which we have referred at some length on account of its intrinsic interest, the spinal canal was not opened, but in the following cases M. Chipault has deliberately adopted a method for the treatment of ante-medullary lesions by trephining and drainage through the vertebral canal. In his three cases the patients were the victims of Pott's disease, and were paraplegic. The first, a boy, aged nine, who had suffered for some months from caries of the upper dorsal spine, suddenly became paralysed after falling down a staircase. He was treated by suspension and jackets, but without benefit. There was incontinence of urine but not of fæces; there was no cystitis. After a short interval the following operation was performed. An incision 10 c.m. long was made over the transverse processes of the 2nd, 3rd, 4th, 5th, and 6th dorsal vertebræ, the periosteum was reflected outwards, and the arches resected. The dura mater was found healthy, but at the 4th vertebra there was found a projection and a compression so marked that the spinal cord seemed to be altogether wanting. Numerous fungous projections into the canal were scraped away, a large abscess was opened, and the ridge of bone projecting was completely removed, and the cavities of the diseased vertebræ as far as possible cleaned out. The destruction of the bodies was enormous, and the removal of the disease certainly incomplete. Notwithstanding this the wound healed, and the progress was excellent for some time, but a month after the operation the

child succumbed to an attack of broncho-pneumonia. At the autopsy the wound was found firmly closed by a mass of osteo-fibrous tissue, evidently developed from the periosteum that had been preserved; but a large cold abscess in connection with other diseased vertebræ was found. In the second case, a girl aged four and a half years, the same region of the spine was affected, but not so extensively. The paraplegia was one produced by a gradually increasing pressure, and not one suddenly developed by fracture or displacement. A similar but less extensive operation was performed. Numerous outlying fungosities were scraped away, and the principal focus of infection in the posterior part of the body of the 4th dorsal vertebra was thoroughly evacuated and cleansed. A drain was inserted into it and brought out across the vertebral canal between the 4th and 5th dorsal nerves; the muscles cut were sutured, then the skin, and the whole wound irrigated until the boric solution returned clear. An immobile dressing was applied. An excellent recovery followed. On the second day motion returned in the toes, and on the fifth day she could lift the heel from the bed. In the third case, a child whose age is not given, a similar procedure gave similarly good results. In six hours after the operation the child lifted its two heels together off the bed to any height, and the paralytic club-feet had disappeared; and the following day the exaggeration of the knee reflexes was gone. So far it has continued to progress favourably.

Striking as these cases undoubtedly are, though too little time has been allowed to elapse after the operations to formulate any decisive judgment on the permanency of their results, still M. Chipault must be congratulated on the skill and courage with which he has tackled a class of hopeless cases, and one too often allowed, hitherto, to glide unheeded from suffering to suffering till death brings a happy release. The conclusions which the author formulates from his experience are as follows:—

1. The operation is anatomically possible; it requires skill, but it is easy to avoid injury of the meninges or of the spinal nerve roots. Drainage and irrigation of the diseased centres through the vertebral canal do not give rise to even transitory disturbances of the medulla.
2. By direct treatment of the tubercular focus we may hope to obtain a result not merely palliative but curative—a result impossible with the methods hitherto employed.

X.—SPASMODIC TORTICOLLIS.

Dr. Charles A. Powers has recorded (*New York Medical Journal*, March 5, 1892), a case in which he performed the operation recommended by Keen in cases of obstinate spasmodic wryneck, in which excision of portion of the spinal accessory nerve has failed to give relief—viz., resection of the posterior branches of the first three cervical nerves. This procedure was independently practised and advised by Mr. Noble Smith, and his case, in these countries, together with those of Dr. Keen and the author in America, constitute, according to Dr. Powers, the only three cases as yet recorded. Keen's patient was a woman, fifty-four years of age, who had suffered for some years from spasmodic movements of the head towards the left shoulder. In 1886, when the affection had persisted for over two years, Dr. Ashurst excised four inches (?) of the spinal accessory nerve; the spasms disappeared for a week and then returned as before. Some time after this the patient came into Keen's hands, and excision of portions of the nerves supplying the posterior rotators was practised, with the result that though a slight amount of spasm returned the patient was much benefited by the operation. In Noble Smith's case, a lady, aged forty-one, had suffered for sixteen years from severe spasmodic wryneck, the result of a strain of the neck. Stretching, and subsequently resection, of the spinal accessory nerve were performed; but, the spasms continuing, a month later, in May, 1890, parts of the posterior divisions of the upper cervical nerves, as low down as the fourth, were excised. Recovery from the operation was complete, the spasms ceased, and eleven months afterwards there had been no recurrence.[a] Dr. Powers' patient was a man of muscular build, thirty-seven years of age, in whom the spasms began two and a-half years previously, and had been increasing in severity ever since. Only the posterior rotators appeared to be affected; "the spasmodic movement seemed to be a rotation of the atlas upon the axis;" the trapezius and sterno-mastoid were apparently not implicated. Excision of parts of the posterior divisions of the upper three cervical nerves was performed, with the result that the patient is now free from pain, which before was intense; "the deformity is but slight, all movements of the head are quite free, there has been no return

[a] For a fuller account of this case, and description of the steps of the operation, see "Spasmodic Wryneck and other Spasmodic Movements of the Head, Face, and Neck." By Noble Smith, F.R.C.S., Ed. London: Smith, Elder, & Co., 1891.

of the spasms, and he is able to attend to his daily work which was impossible before the operation." The author discusses the various steps of the operation, the relative value of the transverse incision adopted by Keen and followed by him, and the vertical incision of Smith, and attributes the better result obtained in Smith's case to the inclusion of the fourth nerve in the resection. This he regards as an advisable step in future operations. From his study of the subject he concludes: "That in spasmodic affection of the muscles supplied by the posterior branches of the upper cervical nerves resection of those nerves is a procedure, practically devoid of danger, which offers many chances for marked amelioration and a fair prospect of permanent cure."

XI.—TENOTOMY BY A NEW METHOD.

Dr. W. W. Keen, rightly regarding the older method of subcutaneous operation as a relic of pre-antiseptic days, has devised a new method of open operation, which he practised successfully in a case of contracture of the flexors of the fingers following hemiplegia. Subcutaneous section was always more or less of a haphazard operation, and the length to be added to the shortened tendon could never be accurately measured, Now the necessity for operating in the dark and avoiding the entrance of air into the wound are things of the past, and the surgeon can accurately measure the required length he wishes to add to the shortened tendon. A free incision is made; the contracted tendon is fully exposed, and is then divided along its middle for a little more than half the distance it is intended to lengthen it. The halves of the split tendon are now divided above and below on opposite sides—*e.g.*, in the forearm. If the ulnar side of the split tendon is cut above, the radial side must be cut below. In this way the two halves are allowed to glide the one over the other for the required distance and are then united by transverse sutures. The simplicity and wide applicability of this operation will at once recommend it to surgeons, and another of the once useful subcutaneous methods of operation will go the way of so many other short-lived surgical triumphs.

XII.—TUBERCULOSIS OF THE URINARY BLADDER.

In an article on the "Electric Illumination of the Bladder" (*Medical Annual*, 1892, p. 118) Mr. Henry Fenwick sums up the results obtained up to the present by the use of the cystoscope.

Among the subjects referred to in this most interesting review, which is illustrated by some excellent chromographs, is that of tuberculosis, and though admitting that "there is no disease of the urinary organs capable of such accurate mimicry as tuberculosis," and that "there is hardly a common disease of the tract that it does not simulate at one time or other of its progress;" yet Mr. Fenwick believes that the diagnosis may be accurately made, most stress being laid on the family history and the presence of the bacillus tuberculosis. In a case here illustrated by a figure "the symptoms were only of a few weeks' duration, and were very characteristic of *stone* in the bladder." Electric endoscopy showed ulceration. "The ulcers were small, punched out, and had vivid red margins; they were situated on a dull red base of infiltrated mucous membrane. The patient rapidly became phthisical." We cannot, however, agree with the distinction Mr. Fenwick apparently draws between "tubercular" and "scrofulous" ulcers (p. 123). *Post-mortem* evidence shows the identity of the processes in the bladder as elsewhere. For what he calls "catarrhal and scrofulotic ulcers" the author recommends injections of lactic acid, one-half to three per cent., given daily, and scraping; but no description of the latter procedure, nor reference to cases, is given, important as it undoubtedly is to bring within the range of surgical progress an affection so intrinsically painful, and so liable if left to itself to lead to a lethal issue. Hence we hail with pleasure a paper bearing on this subject by Dr. Lewis S. Pilcher, of Brooklyn, entitled "Notes on Tuberculosis of the Urinary Bladder, and the value of Suprapubic Cystotomy in its Treatment" (*New York Medical Journal*, March 5, 1892). Dr. Pilcher gives notes of five cases, in four of which this operation was performed. From an analysis of the cases we gather that the leading symptoms of tubercular ulceration in the bladder are—frequency of micturition, generally associated with pain and straining; hæmaturia, in all cases except one, in which there was an ischio-rectal abscess and the urine was full of pus; general irritability of the bladder; and frequently the passage of shreds of tissue in the urine. In all cases epithelial *débris* and pus cells occur in large quantity. As regards the diagnosis of primary disease, stress is laid on the observations of Rosving, who found tubercle bacilli in the urine in three out of thirty cases of cystitis examined by him, and the first place among diagnostic tests is, of course, given to the discovery of the bacillus. Of the

cystoscope Dr. Pilcher, rather unfairly we think, speaks in a very slighting way. "If, by rare chance, when it is introduced, the fluid contents of the bladder are clear enough to enable its mirror to reflect any portion of the bladder wall," yet it can reveal but imperfectly and uncertainly the degenerative and inflammatory changes that may be present; while direct ocular inspection and palpation through a dilated suprapubic opening still need the confirmation of the bacteriologist in order to establish beyond question the opinions they may have suggested." What "ocular inspection" revealed in one case is thus described:—"An area of mucous membrane as large as a silver dollar, intensely congested, velvety in appearance, raised somewhat above the surface of the surrounding normal mucous membrane, as if by infiltration of the submucous tissue, and bleeding freely when touched." This is the "*tubercular ulcer*," and may be contrasted in its features with that described by Mr. Fenwick above, not as being contradictory, but as illustrating most probably two phases of the one condition—the "punched out" ulcer of the latter being a later stage of the infiltrated patch "somewhat raised above the surrounding mucous membrane" to which Dr. Pilcher refers.

In the treatment of these, unless in an early stage, scraping can avail but little, as the infiltration in many cases rapidly becomes so deep that no instrument dare follow; and Dr. Pilcher questions "whether in any of these cases very substantial advantage is to be hoped for by attempts at special topical anti-tubercular treatment." "The most that can be hoped for from treatment is to prevent the collection of urine in the bladder, to keep the bladder at rest, and to mollify the effects of the existing infection by relieving pain, removing *débris* and irritating secretions, preventing muscular spasm, and restraining inflammation," and that is surely a good deal to attain in a hopeless class of cases. So far the results obtained cannot be said to be more than promising. Of the four cases operated on very marked benefit was derived in two—one in fact practically cured—"while in the other two no benefit, but on the whole, decided disadvantage was the result." Dr. Pilcher closes his most interesting and suggestive paper by considering two questions:—"1. How early in a case of bladder tuberculosis is a suprapubic section desirable? 2. How long is it desirable to maintain the suprapubic opening patent?" The answer to the first depends upon the amount of cystitis, of pain, and of general distress which are present.

Nothing is gained by delay; and physiological rest should be obtained for the diseased organ before "the general health is sapped by the local suffering, the extension of the disease, and the absorption of deleterious circumstances into the circulation." The second question will be answered by the amount of recovery made, or of comfort obtained, by the patient after the operation. In all cases many months of suprapubic drainage will be required; in many others the issue of the case will save the surgeon the trouble of assigning any limit to its duration.

XIII.—TREATMENT OF TUBERCULOSIS OF BONES AND JOINTS.

In an elaborate and exhaustive paper published in the *Annals of Surgery* (Vol. XV., No. 1, January, 1892), Dr. N. Senn reviews the method of treatment of tubercular affections of bones and joints by the so-called parenchymatous and intra-articular injections, and shows such a favourable series of results that many surgeons will be inclined to give the method a full trial. The various remedies that have from time to time been suggested are passed under review, and the preference is finally given to iodoform, used as a 10 per cent. emulsion in glycerin or olive oil.[a] The ethereal solution of iodoform should never be employed as it may give rise to local troubles—necrosis, and to general toxic symptoms. Dr. Senn attributes the beneficial effects of these injections directly to their anti-bacillary qualities. The injections ought to be carried out with intervals of from one to two weeks until the indications point to a cessation of specific and a return of healthy inflammation. How this is to be ascertained is thus formulated:—"In tubercular empyæma (*sic*) of joints and tubercular abscesses gradual diminution of the contents of the joint or abscess at each successive tapping, lessening of the solid contents of the fluid, and increase of its viscidity are the conditions which indicate unerringly that the injections are proving useful, and that in all probability a cure will result from their further use." The strictest antiseptic precautions must be observed during the processes of tapping and injecting, and where a large abscess cavity has to be evacuated repeated irrigation should be employed before the injection of the emulsion. The author strongly urges the employment of "parenchymatous and intra-articular injections

[a] We can recommend as a still more valuable injection-material a solution of iodoform in "paroleine," an odourless and absorbent petroleum derivative recently introduced by Messrs. Burroughs, Wellcome, & Co.

of safe anti-bacillary substances in all subcutaneous tubercular lesions of bones and joints accessible to this treatment." Of course amputation and resection are not to become forgotten arts in the surgery of joint tuberculosis in the future; but even when recourse to these is necessary Dr. Senn finds that "preliminary treatment by iodoform injections into the affected joint constitutes a valuable preparatory treatment to the operation, and adds to the certainty of a favourable result." Next to iodoform in efficacy the author lays stress on the balsam of Peru. A brief abstract of a case will show more clearly the method employed. It is one of the ten recorded by Dr. Senn in support of the views advanced. The subject was a boy aged seventeen. Diagnosis:—Tubercular spondylitis of upper dorsal vertebræ; formation of large lumbar abscess, probably communicating with the primary osseous lesion. The abscess was tapped in the lumbar region immediately below the last rib, and *six pints* of characteristic tubercular pus were evacuated. The cavity was washed out repeatedly with boric acid solution until the fluid returned perfectly clear. An ounce of iodoform emulsion was now injected and antiseptic dressings applied. Between June 18 and August 5, tapping, irrigation, and subsequent injection, as described above, were four times performed. At each tapping the quantity of fluid was less, so that on the last occasion not more than *four ounces* of a viscid opaque fluid were removed. Since then the case has progressed favourably; the abscess has not refilled, and the general condition of the patient has undergone marked improvement. This case is extremely hopeful; most surgeons being familiar with the dreary chronicity of psoas and lumbar abscesses, so that such a result in less than two months of treatment is one that many will be anxious to follow. In view of this we may append one of the conclusions to which Dr. Senn's experience has led him:—"In open tubercular affections of joints, incision, scraping, disinfection, iodoformization, iodoform gauze tampon, suturing, and subsequent injections of iodoform emulsion as advised by Billroth yield excellent results, and should be employed in all cases in which a more formidable operation can be avoided."

Further evidence in favour of Dr. Senn's method comes to us from France, and with a weight of authority which cannot be overlooked. At the meeting of the Congress for the Study of Tuberculosis (*Revue de Chirurgie*, No. 9, 1891), M. Verneuil brought forward nine cases illustrative of the results obtained in surgical tubercu-

losis by subcutaneous injection of *iodoformed ether*. In two cases of Pott's disease—one an enormous iliac abscess, the other a psoas abscess pointing in the thigh—rapid cure had followed the evacuation of the pus and the introduction of the iodoform, although in the former case some drops of ether had escaped into the abdominal cavity and caused peritonitis in a slight degree; and the cure had now persisted for some years. In two cases of hip-disease which required resection and subsequent scraping of numerous fistulæ which recurred, injection of iodoform caused a rapid cure. In a case of white swelling of the knee in which, on account of the rapidity of its progress, excision of the joint was considered advisable, rest and iodoform injections caused rapid closing of the sinuses and such amelioration of the symptoms that the patient, a lad of sixteen, can now walk about in a fixed apparatus, the local and general condition being perfect. Other cases in which good results followed were—tubercular ulceration of the tongue, white swelling of foot, and an empeyma in which a fistula persisted after the resection of portions of several ribs. M. Verneuil insisted on the necessity for the continuance of the iodoform treatment for some time after apparent cure in doses of 5 to 10 centigrammes, and drew attention to the point in using an ethereal solution that the canula should be retained in place for some little time to allow the escape of the vaporised ether and prevent undue distension of the sac. At the same meeting M. Redard drew attention to the good results he had obtained by the injection of iodoformed oil—10 parts in 100—which he prefers to ether. Out of 30 cases—26, tuberculosis of the bones—25 cures were noted.

These striking results in America and on the Continent ought to draw more closely the attention of surgeons at home to this method of treatment, which appears, at any rate, free from all risk.

XIV.—GASTROSTOMY.

In an admirable paper read before the Chicago Medical Society, and published in the *Medical Recorder*, January, 1892, Dr. Senn reviews the present position of this operation, basing his remarks on three cases of his own. As the result of an analysis of all the cases recorded (the operation only dates from 1849; Sédillot's case and many of the earlier cases belong to the pre-antiseptic era), the mortality from the operation is only about 25 per cent.—certainly a good record for such a grave procedure; one, moreover, that is generally, and wrongly, only resorted to when the

patient's powers have sunk below rallying point. Now that the question of the relation of physician and operating surgeon in cases of this class is being so earnestly debated, perhaps we may be allowed here to emphasise the remarks with which Dr. Senn directs attention to the necessity of early intervention if a prolongation of life is to be hoped for. "The bad showing of the operation should only remind us not to postpone it until the patient has not sufficient recuperative powers left to rally from its immediate effects, and to secure a satisfactory repair at the site of operation. . . . The operation should never be delayed until the patient is on the verge of starvation." The various methods of performing the operation are discussed, and Fenger's incision is rightly, we believe, discarded, the incision at his site causing too great a drag on newly-formed adhesions, and accounting for many of the failures by rupture of the union after withdrawal of the mechanical supports employed. "The upper central part of the left rectus and the eighth intercostal space between the cartilages of the ribs are the most desirable points for the formation of the gastric fistula." The former is the incision advised by Von Hacker and practised by him in fifteen cases, fourteen of which were successful so far as the operation was concerned. The latter is the ingenious suggestion of Hahn (vide *Berl. med. Wochenschr.*, No. 14, 1890), successfully adopted on eight occasions. In discussing the question of difficulty in finding the stomach, owing to the atrophy and diminution in volume of the organ which are so often present in cases of œsophageal obstruction, Dr. Senn refers to the mistakes that have been made, such as opening the duodenum and transverse colon, and recommends the distension of the stomach by gas after his method of intestinal inflation now so widely practised. But here he seems to forget the usual impermeability of the stricture, whether cicatricial or neoplastic, at the period when operative measures are resorted to, and the difficulty, not to say danger, of stopping in the middle of an operation of such serious nature to attempt catheterisation of the stomach. This seems a fatal objection to a proposal which otherwise would solve an anxious problem. Dr. Senn is in favour of a two-step operation. In every case where delay is possible the fistula should not be established until the third or fifth day when adhesion will be firm enough to prevent gastric extravasation into the peritoneal sac. Meanwhile the patient must be supported by rectal feeding—four ounces every four or five hours. A full description is given

of Witzel's ingenious suggestion for tunnelling—or rather forming an artificial tunnel in—the stomach wall to prevent the leakage of the gastric contents and its concomitant troubles. Witzel has employed this device in two cases with good result (*Centralbl. f. Chir.*, No. 32, 1891).

Perhaps the most important question discussed by Dr. Senn is the performance of gastrostomy with a twofold object in view—the immediate saving of life in cases of cicatricial contraction of the gullet, and the subsequent "retrograde dilatation" of the stricture through the opening so obtained. This operation has already been done with a certain amount of success. In summing up the case for operation the author arrives at the following important, among other, conclusions:—"Gastrostomy for malignant obstruction on the proximal side of the stomach, if performed at a time when the patient is sufficiently strong to survive the immediate effects of the operation, is a comparatively safe procedure, and adds from a few weeks to six or eight months to the patient's life." "Leakage from the fistula can be prevented most effectually by making the opening in the stomach small, by the use of an inflatable double rubber bulb through which the feeding tube reaches the stomach, or by making an oblique tunnel in the anterior wall of the stomach as devised and practised with success by Witzel." "Mastication of food, as a preliminary step to its introduction into the stomach, satisfies, at least in part, the sense of hunger, which is not always accomplished even by liberal exclusive gastric feeding through the fistula."

The essay it will be seen embraces all the most recent work on the subject and is worthy of careful attention. The subject is one that has always been of much interest to the writer since having had the opportunity of seeing Mr. Sydney Jones' case alluded to by Dr. Senn in which the patient survived for forty days. If that case taught any lesson it was this—delay is fatal both to the patient and to the operation. Once again let it be urged that in early resort lies the only chance of success. Not only is the recovery from the operation more certainly assured, but much is gained by early removal of the mechanical irritation of food—a point not touched on by Dr. Senn, but one of the greatest importance, especially in the delaying of the evolution of malignant growths. Otherwise surgery can offer no relief to humanity in the passage of that most terrible of all paths that lead to the valley of the shadow of death—the path of starvation.

CLERY & COMPANY.

High-Class * Tailoring.

TWEED SUITS

In Irish and Scotch, best qualities, from 70/- to 85/-

MORNING-COAT SUITS,

Best Irish and West of England Coatings, from £4 5s. to £5.

FROCK SUITS,

In Venetian and Cloths, Silk or Satin-lined, from £4 15s. to £6 10s.

MORNING COATS & VESTS

In Vicunas and Worsteds, all weights, from 65/- to 80/-

SUPERIOR WEST OF ENGLAND TROUSERINGS

From 18/6 to 26/6.

COVERT COATINGS,

All Shades, from 60/- to 75/-

DRESS SUITS,

Fine Twills, Silk or Satin-lined, from £4 15s. to £6.
Dress Suits, Best Black Cloth. Silk or Satin-lined, £5 10s. to £6 10s.

Best Workmanship & Fitting Guaranteed.

CLERY & COMPANY.

21 to 27 LOWER SACKVILLE-ST.,

*** DUBLIN. ***

CLERY & COMPANY.

WHITE SHIRTS.

3 Fold Irish Linen Fronts, 3/6 each, 19/6 per ½ doz.

3 do. Better quality, 4/6 each, 25/6 per ½ doz.

3 do. Extra quality. 5/6 each, 31/6 per ½ doz.

DRESS SHIRTS.

Extra Wide Fronts. One Stud, Square Cuffs, 4/6 each, 25/6 per ½ doz.

do. Better quality, 5/6 each, 31/6 per ½ doz.

do. Best quality, 6/6 each, 37/6 per ½ doz.

COLLARS & CUFFS.

3 Fold Linen Collars. Newest Shapes, 5/6 per doz.

4 do. Best quality, 7/6 per doz.

4 Linen Cuffs, do. 11/6 per doz.

CRICKETING AND LAWN TENNIS OUTFITS.

TENNIS SHOES in Great Variety.

CLERY & COMPANY.

21 to 27 LOWER SACKVILLE-ST.,

DUBLIN.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

CLINICAL RECORDS.

A Case of Protracted Enteric Fever. By R. J. Kinkead, B.A., M.D., Univ. Dubl.; Professor of Obstetric Medicine and Lecturer in Forensic Medicine in Queen's College, Galway.

Three hundred years ago (1591) Forestus described the disease, which we now call enteric fever, under the name *Febris lenta*, from its long duration. In 1729 Strother, in his "Very Remarkable History of a Spotted Fever," spoke of the "Slow" or "Lent Fever," which could have been none other than enteric fever. Protracted as the duration of this fever not infrequently is, the following case is probably without a parallel. The patient was admitted to hospital after five weeks' illness, and was discharged convalescent after a sojourn in hospital extending over 18 weeks and 5 days.

Case.—Mrs. X., aged fifty-two, mother of a large family, a very stout woman, was admitted to hospital on Oct. 2, 1891, and discharged on Feb. 9, 1892. Five weeks before admission diarrhœa began, notwithstanding which she went to Dublin, remained there three or four days, came home, and had no medical advice or treatment for three weeks. She was then seen, prescribed for, and directed to remain in bed; but diarrhœa getting a little better she got up, went out, and continued at her household duties until Oct. 1, when diarrhœa still persisting, and feeling weak, she again sought advice.

All the symptoms of typhoid fever were well marked; numerous spots, abdomen tympanitic, pain, tenderness, and gurgling in right iliac fossa; temperature, 101·6°, rising to 103° in evening; stools, "pea-soup;" the urine scanty, of low specific gravity, and albuminous. Abdominal distension and pain increased, vomiting followed, and on Oct. 8 the respirations became slightly hurried. On morning of 9th there was dulness on percussion, and fine crepitus over base of left lung, up to within a couple of fingers' breadth of angle of scapula, extending

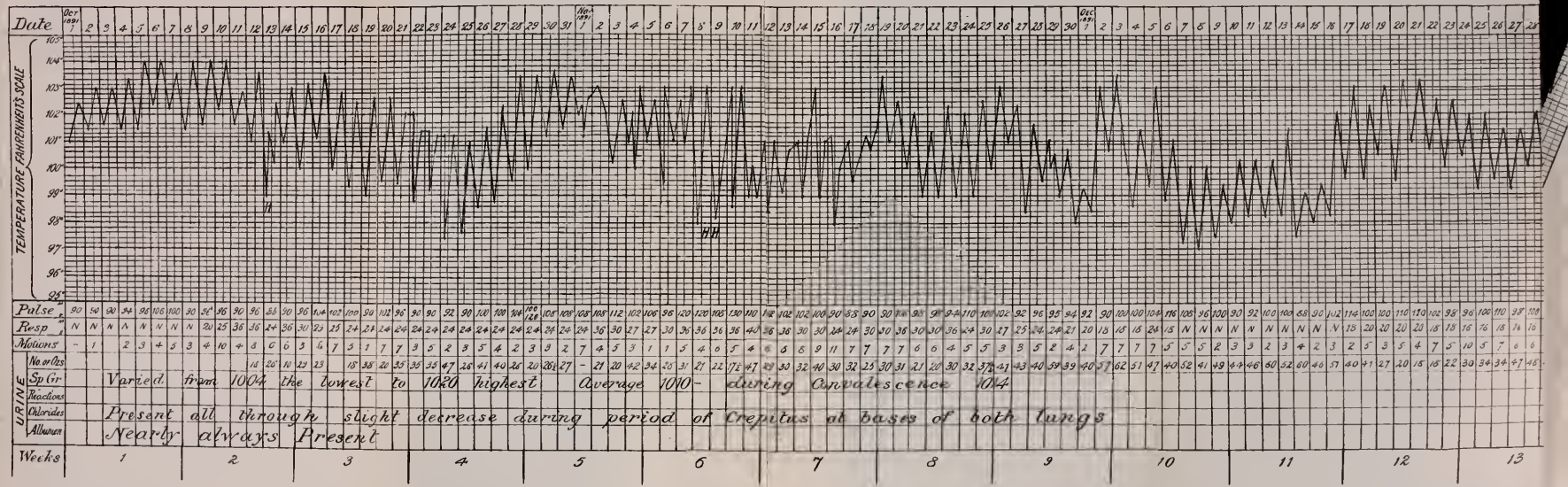
round to sub-mammary region; the pulse was weak and compressible; the first cardiac sound short, but fairly good, the second sound accentuated; mind clear, but patient very fretful and nervous, frequently crying. The urine steadily diminished in quantity; the albumen, the congestion of lungs, the distension of the abdomen as steadily increased; the tongue dry and dark brown, the face puffy and flushed, when on the 13th sharp hæmorrhage from the bowels occurred. On that day, and on the following, she had six stools, at first nearly all liquid blood, with large clots, gradually getting more fæcal and less bloody, until there was no blood in last couple of stools on the 14th.

Although she was very much weakened by it, yet on the whole the hæmorrhage proved beneficial. The kidneys were distinctly relieved; the quantity of urine increased; the albumen diminished to a trace, and the specific gravity rose. At the same time the lung symptoms improved, dulness and crepitus diminished, respirations became deeper and slower, the temperature steadily fell, the abdomen was less distended, and the patient progressed fairly well until Oct. 27—then she became worse than before. Both lungs were now engaged, dulness and crepitus at both bases; respirations 36 to 40 per minute; pulse rapid, weak, irregular; cardiac sounds short and weak, with a peculiar, musical, high-pitched bruit at apex; frequent liquid stools, sometimes passed under; urine scanty, albuminous, of low specific gravity; and occasionally loss of bladder power requiring use of catheter.

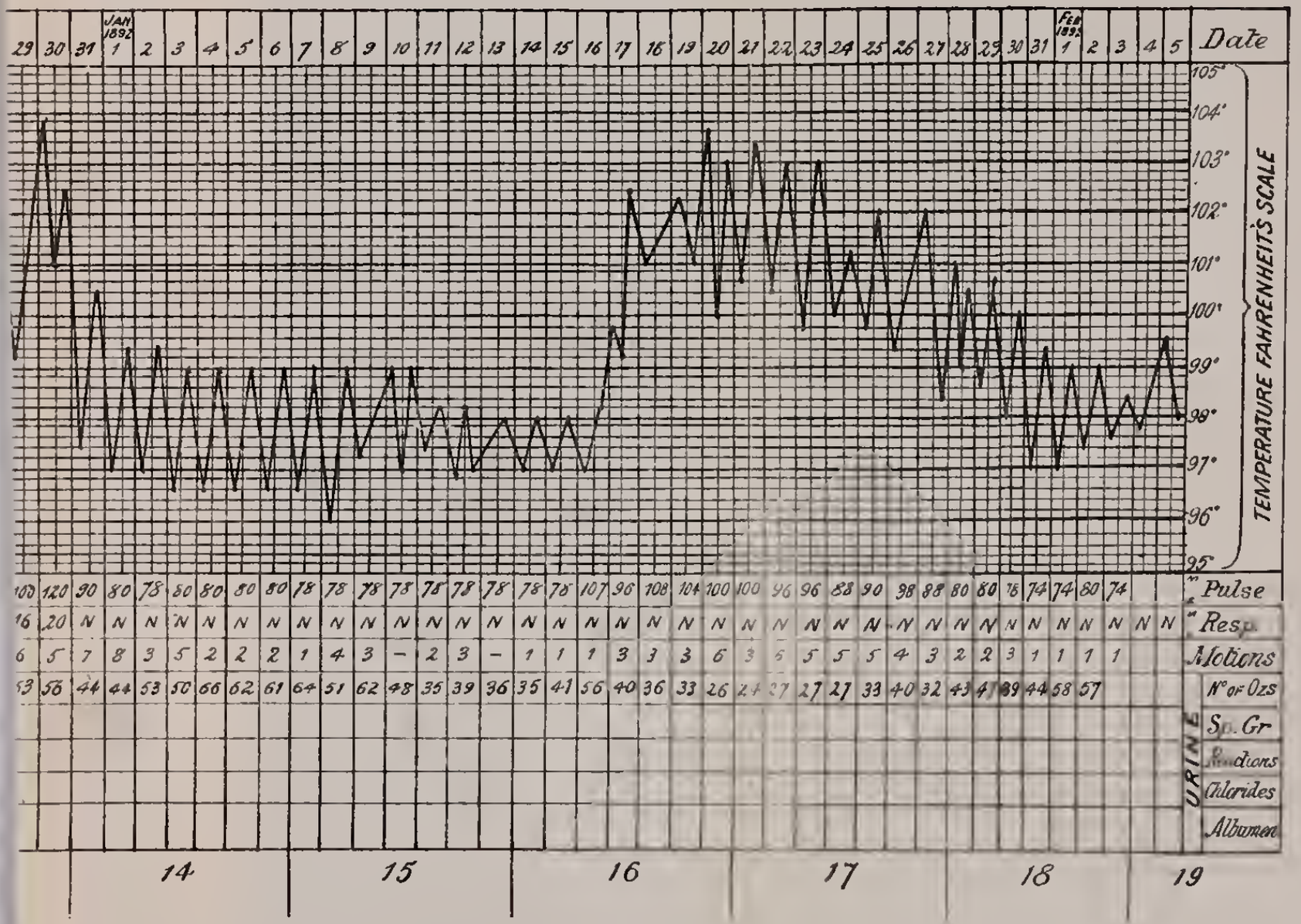
On Nov. 8—38 days after admission, 26 days after former bleeding—a second attack of hæmorrhage from bowels occurred, and very nearly carried off the patient; it was decidedly more profuse, lasted longer, than the first, and reduced her to a profoundly prostrate condition. However, she rallied, and the record for Nov. 9 to Dec. 30 shows a steady continuance of fever, with apparently abortive attempts to defervesce, most disheartening to deal with. If lungs improved the kidneys worked worse, or the abdominal symptoms became aggravated; if abdominal distension declined, diarrhœa lessened, and tenderness not so marked, she would either take to vomiting, or the lung mischief go ahead, and urine become scanty; if kidneys acted better, either lungs or abdomen gave trouble, and sometimes all together got bad; the pulse failed, and the patient's condition appeared hopeless, while all through fresh spots kept coming out as the old ones faded away. On Dec. 24 the stools began to thicken, and between 30th and 31st the temperature fell from 103·8° to 97·2°.

The fall in temperature was followed by an all-round improvement. The lungs cleared up, and respiration became normal; urine became abundant, and free from albumen; the pulse fell in rate, and became fuller in volume; tongue became clean and moist; abdominal distension disappeared, and stools became solid.

CLINICAL CHART OF TEMPERATURE, &c.— Name Mrs X—— Age 52. Disease, Typhoid Fever, Resul



t. Recovery.


Date
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
TEMPERATURE FAHRENHEIT'S SCALE
Pulse
Resp.
Motions
N° of Ozs
Sp. Gr
Reactions
Chlorides
Albumen
URINE
14
15
16
17
18
19

This happy condition continued for 16 days, when without any apparent cause, without any error in diet, without any worry of any kind, or mental anxiety to account for it, and without any warning whatever, the temperature rapidly rose from 97° to 102·4°—and except the lung mischief all the typhoid symptoms, spots included, returned. This new bout of fever lasted 14 days, terminating by a gradual fall of temperature.

She was discharged convalescent on Feb. 9, 1892, having been in hospital 18 weeks and 5 days. At this date, although the morning temperature had been but 9 days below the normal line, and the evening temperature only 5 days at normal range, it was deemed wise—considering the length of time she had been in a small hospital—to remove her from an atmosphere which must have been saturated with typhoid emanations. Although I learn from Dr. Brereton, who took charge of her during convalescence, that occasionally there have been rises of temperature of transient duration, she has steadily progressed on the road to health, except for an attack of bleeding from the throat, which occurred suddenly without any inflammation or pain, was decidedly profuse in quantity, and from behind and below the left tonsil. She woke up on the morning of March 11 spitting blood; the hæmorrhage continued till 2 a.m. on the 12th, and we controlled it with difficulty by small doses of ergot, vigorous swabbing with liq. ferri perchl., and the application of ice.

During the fever dietary and stimulation were attended with grave difficulties. At times digestive power and absorption seemed gone altogether; milk, even when diluted with soda-water or lime-water, passed in curds in the alvine evacuations; beaten-up yoke of egg passed off unchanged. On one occasion when sleep failed, and diarrhœa was profuse, opium and belladona pills were administered; in a few hours they appeared in the stools as perfect as when swallowed. If alcohol was withheld the heart immediately failed; on the other hand, it seemed when pushed, so as to keep the heart going, to bother the kidneys. The administration of a couple of ounces of gin in the day, along with whisky or champagne, solved the difficulty. Milk evidently disagreeing, whey was tried, but patient soon tired of it, and stomach kicked against it; then bread jelly was given, which she relished; it was well digested, and proved most satisfactory.

Quinine was well borne, but seemed absolutely inert—10 gr. doses, repeated in an hour, produced neither headache nor singing in the ears, nor deafness, nor did it affect the temperature. The only medicine which lowered temperature was Warburg's tincture in full doses, and wherever on the chart a high temperature is seen, followed by a sharp drop, and falls and rises of a couple of degrees, Warburg had been given.

Turpentine stupes relieved the abdominal distension. Sometimes, however, they had to be aided by 1 drachm doses by the mouth.

The first attack of hæmorrhage was met with ergot and turpentine; the second by ergot and hazalin, and it seemed to me that the latter acted better. Almost continuous dry cupping was kept up over the lumbar and thoracic regions; it not only appeared to relieve the kidneys, but had the distinct advantage of keeping patient off her back.

It is interesting to note the connection between rises of temperature and decrease in quantity of urine, and the albumen therein. Prior to and during rise of temperature, the face flushed if rise was about to be high or prolonged; the flush was peculiar, not in cheeks alone, but the forehead became puffy, then a bright red, smooth, shining, very similar in appearance to erysipelas.

Although the disease lasted so long, accompanied, too, by such marked digestive disturbance or profuse diarrhœa, the patient wasted very little; she was fat when admitted, and fairly fat when discharged. It goes without saying that such a case involved most arduous nursing and constant attendance. She was splendidly nursed by Nurses Kelly and Keys from the Ushers' Island, Dublin, Institution, and the fact that after 19 weeks she left hospital without a sign of a bed-sore, or the skin being even at any time abraded, speaks volumes for the nursing.

Acknowledgment is also due to Prof. Brereton for the valuable aid afforded me by him in daily consultation.

ERRORS IN HEALTH REPORTS.

The editor of the (Sacramento) *Occidental Medical Times* announces his discovery that "glaring errors are, unfortunately, frequent in the reports of health departments." In the June report for Denver, for instance, the estimated annual mortality ought to have been 19·04 instead of 10·03 per mille, at which it was stated. He illustrates his assertion by the reported statistics of five other large cities besides Denver. "Most of the discrepancies," he says, "were errors of arithmetic, but in some cases the rate was found in a very unique way. To find the annual rate, the number of deaths for the month was divided by the number of thousands of population. The quotient, of course, gives only the monthly rate, and as this seemed too small for an annual rate, the dilemma was solved by removing the decimal point one place to the right. This mistake occurs in a comparative mortality table published in the Minneapolis health report for June." The want of uniformity in reports is also a serious disadvantage. Each city chooses its own tables and computations, and classifies its own diseases in its own way. Some report weekly, others monthly. Some calculate mortality according to census, others according to estimated population. Thus great difficulties are thrown in the way of the comparative statistician.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, April 23, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	April 2.	April 9.	April 16.	April 23.		April 2.	April 9.	April 16.	April 23.
Armagh -	21·0	14·0	7·0	42·0	Limerick -	46·3	23·9	14·0	28·1
Belfast -	32·4	38·1	30·2	35·9	Lisburn -	34·3	30·0	30·0	25·7
Cork -	31·8	28·4	39·4	29·1	Londonderry	31·4	14·1	15·7	14·1
Drogheda	30·7	13·2	4·4	13·2	Lurgan -	13·7	18·2	31·9	18·2
Dublin -	35·9	32·7	29·8	35·1	Newry -	12·1	36·2	16·1	16·1
Dundalk -	41·9	29·3	20·9	16·8	Sligo -	36·1	20·6	20·6	15·5
Galway -	45·3	37·8	75·6	34·0	Waterford -	25·0	15·0	15·0	22·5
Kilkenny	42·5	42·5	0·0	18·9	Wexford -	27·1	18·1	18·1	40·6

In the week ending Saturday, April 2, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 21·4), was equal to an average annual death-rate of 22·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·2 per 1,000. In Glasgow the rate was 23·5, and in Edinburgh it was 18·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 33·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·7 per 1,000, the rates varying from 0·0 in ten of the districts to 5·3 in Belfast—the 159 deaths from all causes registered in that district comprising 17 from measles, 4 from whooping-cough, 1 from simple continued fever, 4 from enteric fever, 26 from phthisis, and 45 from diseases of the respiratory system. Among

the 46 deaths from all causes registered in Cork are—1 from measles, 1 from whooping-cough, 2 from phthisis, and 15 from diseases of the respiratory system. The 33 deaths in Limerick comprise 1 from scarlatina and 1 from enteric fever, and the 20 deaths in Londonderry comprise 1 from whooping-cough and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 217—103 boys and 114 girls; and the registered deaths to 250—110 males and 140 females.

The deaths, which are 38 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 37·3 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 35·9 per 1,000. During the first thirteen weeks of the current year the death-rate averaged 38·4, and was 5·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 40, being 1 over the number for the preceding week, and 17 in excess of the average for the thirteenth week of the last ten years. The 40 deaths comprise 24 from measles (being 2 over the number of deaths from that disease in the preceding week), 2 from influenza and its complications, 3 from whooping-cough, 1 from enteric fever, 1 from diarrhœa, and 1 from dysentery.

The cases of measles admitted to hospital amounted to 58, against 48 for the preceding week and 21 for the week ended March 19. Thirty measles patients were discharged, 10 died, and 118 remained under treatment on Saturday, being 18 over the number in hospital at the close of the preceding week.

Only 2 cases of enteric fever were admitted to hospital against 3 for each of the two weeks preceding. Five patients were discharged, and 44 remained under treatment on Saturday, being 3 under the number in hospital on Saturday, March 26.

Five cases of scarlatina and 2 of typhus were received during the week: 16 cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system amount to 70, or 24 in excess of the average for the corresponding week of the last ten years, and 7 over the number for the week ended March 26. They comprise 45 from bronchitis, 17 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, April 9, the mortality in thirty-three large English towns, including London (in which the rate was 22·2), was equal to an average annual death-rate of 23·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 24·1

per 1,000. In Glasgow the rate was 27·7, and in Edinburgh it was 20·2.

The average annual death-rate in the sixteen principal town districts of Ireland was 31·6 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·2 per 1,000, the rates varying from 0·0 in nine of the districts to 8·1 in Newry—the 9 deaths from all causes registered in that district comprising 2 from diarrhœa. Among the 187 deaths from all causes registered in Belfast are—20 from measles (an increase of 3 as compared with the number for the preceding week), 6 from whooping-cough, 1 from diphtheria, 3 from enteric fever, 4 from diarrhœa, 31 from phthisis, and 42 from diseases of the respiratory system. The 41 deaths in Cork comprise 2 from typhus and 1 from enteric fever, and the 9 deaths in Londonderry comprise 2 from whooping-cough.

In the Dublin Registration District the registered births amounted to 199—101 boys and 98 girls; and the registered deaths to 221—101 males and 120 females.

The deaths, which are 16 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 33·0 in every 1,000 of the population. Omitting the deaths (numbering 2) of persons admitted into public institutions from localities outside the district, the rate was 32·7 per 1,000. During the first fourteen weeks of the current year the death-rate averaged 38·0, and was 5·6 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 36, being 4 under the number for the preceding week, but 13 over the average for the fourteenth week of the last ten years. They comprise 23 from measles (being 1 under the number from that disease in the preceding week), 1 from scarlet fever (scarlatina), 3 from influenza, 3 from whooping-cough, 1 from ill-defined fever, and 1 from dysentery,

The number of cases of measles admitted to hospital is 50, being a decline of 8 as compared with the admissions for the preceding week, but 2 over the number for the week ended March 26. Twenty-three measles patients were discharged, 7 died, and 138 remained under treatment on Saturday, being 20 over the number in hospital at the close of the preceding week.

Four cases of enteric fever were admitted to hospital against 2 for the preceding week. Thirteen patients were discharged, 1 patient died. and 34 patients remained under treatment on Saturday, being 10 under the number in hospital on Saturday, April 2.

The hospital admissions for the week include, also, 2 cases of scarlatina

and 1 case of typhus: 15 cases of the former and 4 of the latter disease remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had risen from 63 for the week ended March 26, to 70 for the following week, fell to 45, or 3 under the average for the corresponding week of the last ten years, The 45 deaths consist of 32 from bronchitis and 13 from pneumonia or inflammation of the lungs.

In the week ending Saturday, April 16, the mortality in thirty-three large English towns, including London (in which the rate was 19·4), was equal to an average annual death-rate of 20·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·5 per 1,000. In Glasgow the rate was 25·5, and in Edinburgh it was 19·8.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 28·5 per 1,000 of the unrevised population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in twelve of the districts to 5·2 in Sligo—the 4 deaths from all causes registered in that district comprising 1 from diarrhœa. Among the 148 deaths from all causes registered in Belfast are—13 from measles (being 7 under the number from that cause in Belfast in the preceding week), 1 from scarlatina, 1 from typhus, 3 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, and 3 from diarrhœa. The 57 deaths from all causes registered in Cork comprise 2 from measles, 1 from whooping-cough, 1 from simple continued fever, and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 161—85 boys and 76 girls; and the registered deaths to 205—99 males and 106 females.

The deaths, which are 14 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 30·6 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 29·8 per 1,000. During the first fifteen weeks of the current year the death-rate averaged 37·5, and was 5·3 over the mean rate in the corresponding period of the ten years 1882–1891.

Zymotic diseases caused 36 deaths, being equal to the number for the preceding week, and 15 in excess of the average for the fifteenth week of the last ten years. The 36 deaths comprise 14 from measles (being 9 under the number from that cause in the preceding week), 2 from typhus, 2 from influenza and its complications, 5 from whooping-cough, 2 from diphtheria, 4 from enteric fever, and 2 from dysentery.

Eighty-nine cases of measles were admitted to hospital, being 39 in

excess of the admissions for the preceding week, which showed a decrease of 8 as compared with the number for the week ended April 2. Fifty-eight measles patients were discharged, 5 died, and 164 remained under treatment on Saturday, being 26 over the number in hospital at the close of the preceding week.

Six cases of enteric fever were admitted to hospital against 4 for the preceding week and 2 for the week ended April 2. Nine patients were discharged, 1 died, and 30 remained under treatment on Saturday, being 4 under the number in hospital on Saturday, April 9.

The hospital admissions for the week include, also, 3 cases of scarlatina and 1 case of typhus: 12 cases of the former and 2 of the latter disease remained under treatment in hospital on Saturday.

As in the week preceding, 45 deaths from diseases of the respiratory system were registered. These comprise 26 from bronchitis, and 14 from pneumonia or inflammation of the lungs. The average number of deaths from diseases in this group during the fifteenth week of the last ten years was 40.

In the week ending Saturday, April 23, the mortality in thirty-three large English towns, including London (in which the rate was 21·0), was equal to an average annual death-rate of 21·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·3 per 1,000. In Glasgow the rate was 26·0, and in Edinburgh it was 18·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 31·9 per 1,000 of the population (unrevised) according to the recent Census.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 5·2 per 1,000, the rates varying from 0·0 in ten of the districts to 10·3 in Sligo—the 3 deaths from all causes registered in that district comprising 1 from scarlatina and 1 from typhus. Among the 176 deaths from all causes registered in Belfast are—18 from measles (an increase of 5 as compared with the number for the preceding week), 2 from scarlatina, 4 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, 2 from enteric fever, and 4 from diarrhœa. The 42 deaths in Cork comprise 3 from measles, 1 from typhus, and 1 from diphtheria. Among the 9 deaths in Galway are—1 from whooping-cough and 1 from diarrhœa. The 3 deaths in Drogheda comprise 1 from typhus and 1 from diphtheria.

In the Dublin Registration District the registered births amounted to 176—91 boys and 85 girls; and the registered deaths to 240—125 males and 115 females.

The deaths, which are 43 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of

35·8 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 35·1 per 1,000. During the first sixteen weeks of the current year the death-rate averaged 37·4, and was 5·4 over the mean rate in the corresponding period of the ten years 1882–1891.

As many as 55 deaths from zymotic diseases were registered, being 34 in excess of the average for the corresponding week of the last ten years, and 19 over the number for the week ended April 16. They comprise 33 from measles (against 14 from that cause for the preceding week), 4 from influenza and its complications, 10 from whooping-cough, 1 from enteric fever, and 2 from diarrhœa.

The number of cases of measles admitted to hospital during the week is 73, being a decline of 16 as compared with the admissions for the preceding week, which were 39 in excess of the number for the week ended April 9. Fifty-seven measles patients were discharged, 6 died, and 174 remained under treatment on Saturday, being 10 over the number in hospital at the close of the preceding week.

Only 3 cases of enteric fever were admitted to hospital, being 3 under the admissions for the preceding week, and 1 under the number for the week ended April 9. Six patients were discharged, and 27 remained under treatment on Saturday, being 3 under the number in hospital on Saturday, April 16.

The hospital admissions for the week include, also, 3 cases of scarlatina, but no cases of typhus were received: 13 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

Forty-six deaths from diseases of the respiratory system were registered, being 3 over the average for the corresponding week of the last ten years and 1 over the number for the week ended April 16. They comprise 29 from bronchitis and 16 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N. Long. 6° 15′ W., for the Month of April, 1892.

Mean Height of Barometer, - - -	30·039 inches.
Maximal Height of Barometer (on 1st, at 9 a.m.), -	30·506 „
Minimal Height of Barometer (on 27th, at 9 a.m.) -	29·655 „
Mean Dry-bulb Temperature, - - -	45·3°.
Mean Wet-bulb Temperature, - - -	42·2°.
Mean Dew-point Temperature, - - -	38·7°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·239 inch.
Mean Humidity, - - - - -	78·2 per cent.

Highest Temperature in Shade (on 20th) - -	63·8°.
Lowest Temperature in Shade (on 15th), - -	27·3°.
Lowest Temperature on Grass (Radiation) (on 15th),	22·0°.
Mean Amount of Cloud, - - - -	42·7 per cent.
Rainfall (on 13 days), - - - -	1·114 inches.
Greatest Daily Rainfall (on 24th), - - -	·410 inch.
General Directions of Wind, - - -	N.W., E.N.E

Remarks.

Like April, 1891, this was a cold, rather dry and March-like month. The mean temperature, rainfall, and rainy days were all below the average. On six days, indeed, the thermometer rose above 60° in the shade, but on five nights it fell below 32°, even in the screen.

In Dublin the arithmetical mean temperature (46·2°) was 1·5° below the average (47·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 45·3°. In the twenty-seven years ending with 1891, April was coldest in 1879 (the cold year) (M. T. = 44·5°), and warmest in 1865 and 1874(M. T. = 50·4°). In 1886 the M. T. was 46·3°, in 1887 it was as low as 45·1°, in 1888 it was (as in 1891) only 45·7°, in 1889 it was 46·1°, and in 1890 it was 47·3°.

The mean height of the barometer was 30·039 inches, or 0·189 inch above the average value for April—namely, 29·850 inches. The mercury was as high as 30·506 inches at 9 a.m. of the 1st, and fell to 29·655 inches at 9 a.m. of the 27th. The observed range of atmospherical pressure was, therefore, 0·851 inches—that is, a little less than nine-tenths of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 45·3°, or 7·5° above the value for March, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max*—*min.* × ·476), the value becomes 45·8°, or 1·6° below the average mean temperature for April, calculated in the same way, in the twenty-five years, 1865–89, inclusive (47·4°). The arithmetical mean of the maximal and minimal readings was 46·2°, compared with a twenty-five years' (1865–1889 inclusive) average of 47·7°. On the 20th the thermometer in the screen rose to 63·8°—wind, S.W.; on the 15th the temperature fell to 27·3°—wind, N.N.W. The minimum on the grass was 22·0° also on the 15th.

The rainfall was only 1·114 inches, distributed over 13 days. The average rainfall for April in the twenty-five years, 1865–89, inclusive, was 2·055 inches, and the average number of rainy days was 15·2. The rainfall, therefore, was considerably below the average, while the rainy days were also deficient. In 1877 the rainfall in April was very large—4·707 inches on 21 days; in 1882 also 3·526 inches fell on 20 days. On the other hand, in 1873, only ·498 of an inch was measured on 8 days; and

in 1870 only ·838 of an inch fell, also on 8 days. The fall in 1890 was 1·575 inches on 14 days, and in 1891, 1·553 inches fell on 14 days.

Solar halos were seen on the 7th and 30th. There was a lunar halo on the 7th. The atmosphere was more or less foggy on the 1st, 2nd, 6th, 7th, 10th, 11th, 12th, 14th, 18th, and 19th. High winds were noted on only 3 days, and did not reach the force of a gale on any occasion, Snow or sleet fell on the 13th and four following days, while hail fell on the 13th, 14th, 15th, 16th, 18th, 25th, 26th, and 27th. The temperature exceeded 50° in the screen on 24 days, compared with 18 days in April, 1891, 7 days in March, 6 in February, and 6 in January. It rose above 60° on 6 days, and fell below 32° in the screen on 5 nights, The minima on the grass were 32°, or less, on 14 nights, compared with 25 nights in March, 16 in February, and 25 in January. The mean lowest temperature on the grass was 32·4°, compared with 34·1° in 1891 and 1890, 34·4° in 1889, 34·6° in 1888, and 31·6° in 1887.

The first two days of the month were beautiful, calm and frosty by night, brilliant by day with light easterly sea breezes. The diurnal range of temperature was extremely large at inland stations—thus on Friday, the 1st, at Loughborough, in Leicestershire, the minimum was 26° and the maximum was 72°—range 46°; at Parsonstown the corresponding values were—28° and 68°, range 40°,

Most favourable weather prevailed during the week ended Saturday, the 9th. The range of atmospherical pressure was especially small, and temperature was much higher than for a long time past—the advance on the previous week being no less than 10·5°. Although the barometrical range was not large, the changes in pressure were frequent and irregular—particularly between Sunday and Wednesday, when rain fell in Ireland, Scotland, and Wales, but not heavily. In the interval from Tuesday evening to Thursday evening thunder and lightning occurred over France, the western half of the English Channel, and the extreme southwest of Ireland—the electrical disturbances seemed to pass in a northwesterly direction, skirting the southwestern edge of an anticyclone of no great height, which formed over the British Islands on Tuesday evening. Some very high day temperatures for the time of year (70° to 73°) were recorded daily in England up to Thursday, when temperature began to give way generally under the influence of a freshening easterly wind. Much haze and fog accompanied this fall of temperature—at least at night. The days, however, were fair and bright after Thursday. In Dublin the mean atmospherical pressure was 29·993 inches, the barometer being observed to range between 30·219 inches at 9 a.m. of Sunday (wind, E.), and 29·916 inches at 9 p.m. of Monday (wind, S.W.). The corrected mean temperature was 49·9°, or 10·5° above the value for the preceding week. The daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. were on an average 48·8°. The shade thermometers rose to 62·4°

on Monday, having fallen to 40·2° on Sunday. Rain was measured on two days to the amount of ·073 inch, ·043 inch being credited to Tuesday and ·030 inch to Monday. The prevailing winds were E. and E.N.E.

The week ended Saturday, the 16th, witnessed a plunge into midwinter with its attendant frosts and snows. The mean temperature was no less than 9·1° lower than that of the previous week (40·8° compared with 49·9°) and nearly all the precipitation was in the form of snow and hail. At the beginning the weather was fine and dry as well as moderately warm with light easterly breezes by day and some haze or fog by night, when the air periodically fell calm. During this period the diurnal range of temperature was very large at inland stations—at Cambridge the thermometer fell from 70° on Sunday the 10th to 29° during the ensuing night; at Parsonstown the extremes in the same time were—max. 67°, min. 31°. In Dublin the range was much less—max. 53·6°, min. 38·9° on Sunday. On Tuesday depressions began to pass southwards across Scandinavia and the North Sea, with the result that the wind freshened from N.W., N., and N.E., and falls of cold rain, hail, and snow became very general. This state of things lasted to the close of the week, which thus proved very inclement. In Dublin the mean height of the barometer was 29·849 inches, pressure ranging between 30·004 inches at 9 a.m. of Sunday (wind E.N.E.), and 29·662 inches at 2 p.m. of Saturday (wind N.N.E.). The corrected mean temperature was 40·8°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 40·0°. The screened thermometers rose to 56·6° on Monday and fell to 27·3° on Friday, when also the grass minimum was only 22·0°. The rainfall amounted to ·283 inch on three days. It was almost entirely in the form of snow and hail. On Tuesday the measurement was ·176 inch. The prevailing winds were N.E. and N.W. At first the nights were calm and foggy.

Opening with very severe winterly weather, the week ended Saturday, the 23rd, ultimately proved very favourable, genial and springlike. The mean temperature of Easter Day, 1892, was in Dublin only 36·0°, or 0·7° below that of Christmas Day, 1891. In the early morning the ground was covered with snow, and snow and sleet fell in frequent showers during the afternoon. Monday was fine, but very cold, with a dry nipping air—at night sharp frost occurred, the thermometer falling to 29·3° in the screen and to 23·4° on the grass. On Tuesday a change to much milder weather began. Up to this time the barometer had been lowest over the North Sea, highest off the west of Ireland—hence a prevalence of northerly winds and low temperatures. From Tuesday onwards the area of lowest pressure was found in the N.W. and N., so that southwesterly to westerly winds predominated, accompanied by much higher temperatures and passing showers at times. A wave of high pressure passed eastwards over the country on Friday night, and was followed by a new depression in the northwest on Saturday, causing a

much-needed fall of rain on the afternoon of that day. In Dublin the mean height of the barometer was 30·190 inches, pressure ranging from 29·868 inches at 9 a.m. of Sunday (wind, N.) to 30·429 inches at 9 a.m. of Saturday (wind W. by N.). The corrected mean temperature was 47·3°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 47·4°. The screened thermometers fell to 28·1° on Sunday and rose to 63·8° on Wednesday. Rain fell in measurable quantity on four days to the amount of ·163 inch, of which ·125 inch was collected on Saturday. The prevailing winds were—first, N,; afterwards S.W. and W. An aurora borealis appeared on Saturday night.

Changeable, rather cold, but not unfavourable weather held throughout the week ended Saturday, the 30th. The general tendency was for the advance over Northern and Western Europe of numerous depressions, of no great depth, from the northwestward. These systems kept the weather in an unsettled, rainy or showery state, while varying winds from Polar quarters (N.W. to E.) prevailed. The night temperatures were decidedly low, and notwithstanding many intervals of bright sunshine very little advance in temperature occurred even by day. The most striking feature of the week was a splendid display of aurora borealis on Monday night—it was seen from most parts of the British Isles. In central and eastern England heavy showers of hail and sleet, accompanied by thunder and lightning, fell on Monday, Tuesday, and Wednesday. In Dublin also hail fell on each of these days, there was a heavy downpour of rain on Sunday night, and a cold rain set in on Friday shortly after midnight, which fell in the form of snow on the mountains south of the city. In Dublin the mean height of the barometer was 30·014 inches, pressure varying between 30·411 inches at 9 a.m. of Sunday (wind, N.W.), and 29·655 inches at 9 a.m. of Wednesday (wind, W.N.W.). The corrected mean temperature was 45·6°, or 1·7° below that of the preceding week. The mean dry bulb readings at 9 a.m. and 9 p.m. were 45·4°. On Saturday the thermometers in the screen rose to 57·8°, having been down to 33·9° during the previous night. The rainfall was ·595 inch on four days. Of this quantity ·410 inch was entered to Sunday. The prevailing wind was northwesterly.

The rainfall in Dublin during the four months ending April 30th has amounted to 5·922 inches on 61 days compared with only 3·203 inches on 46 days during the same period in 1891, 9·045 inches on 59 days in 1890, 8·345 inches on 74 days in 1889, 8·090 inches on 58 days in 1888, and a 25 years' average of 8·466 inches on 66·2 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall during April, 1892, amounted to only ·648 of an inch, distributed over 10 days; ·250 inch falling on the 24th. The total fall since January 1st, 1892, equals only 4·853 inches on 50 days.

PERISCOPE.

PRESENTATION TO SIR GEORGE BUCHANAN, F.R.S.

As our readers are doubtless aware, Sir George Buchanan has lately resigned the post of Medical Officer of the Local Government Board for England. A Committee has been formed with a view to forwarding a movement for enabling those interested in public health throughout the country to give expression to the high estimation in which they hold the important work which Sir George Buchanan has done and for affording some opportunity for the recognition of his conspicuous services in the cause of Preventive Medicine. Under these circumstances it has been decided to open a subscription list (not to exceed two guineas from each contributor) with a view to presenting to Sir George Buchanan some permanent memento of the esteem in which he and his work are held. The Council of the Society of Medical Officers of Health has expressed a desire to be associated with the Committee in inviting subscriptions to the fund. Dr. J. S. Bristowe is the hon. treasurer. The honorary secretaries, to whom contributions may be sent, are—W. H. Hamer, Esq., Ladywell, 69 Dartmouth Park Hill, London, N.W., and J. C. Thresh, Esq., The Limes, Chelmsford, Essex.

BACILLUS LEPRÆ.

According to the *Occidental Medical Times*, this microbe, which had been discovered after laborious research, has been lost again. The Indian Leprosy Commission have not succeeded in cultivating their bacillus. After submitting it to Fränkel and Baumgarten, they declare that their cultivated product is not morphologically identical with the bacillus of leprosy. The new bacillus is the "Bacillus epidermidis," identical with the carcinoma bacillus. So, at least, Baumgarten says.

LAPAROTOMY FOR INTESTINAL PERFORATION IN ENTERIC FEVER.

Dr. Weller Van Hook reports (*Medical News*, Philadelphia, November 21, 1891) a successful case of laparotomy for perforation in enteric fever. The operation was done 9½ hours after perforation, the opening was about 2 mm. in diameter; three longitudinal rows of Lembert sutures were used.

HYPERPYREXIA IN ACUTE RHEUMATISM.

Dr Alex. Robertson reports (*Glasgow Medical Journal*, November, 1891) a case of hyperpyrexia in acute rheumatism. The highest temperature observed was 106·8°. The patient was put into a bath at 90° F.,

which was reduced by the addition of cold water to 71°. The patient was kept in the water for twenty-five minutes, at the end of which time the temperature was 101·4° F., and the pulse had fallen from 160 to 120. Five minutes after being placed in bed the temperature had fallen to 97·2°. The case ended in recovery, but pre-systolic murmur at the apex was established.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Therapeutical Novelties.

Messrs. Burroughs, Wellcome, and Co., of Snow Hill Buildings, London, E.C., have placed in our hands a number of preparations which they have recently introduced :—

1. The first of these preparations is called "Malto-Ricine." It is a mixture of Kepler Extract of Malt, with 50 per cent. of the finest castor oil—hence the name. So intimately mixed are the ingredients that this Kepler Extract of castor oil and malt extract may be described as a solution rather than as an emulsion. The malt extract sufficiently cloaks the disagreeable taste of castor oil, so that this preparation will no doubt be readily taken by children. The dose varies from one to four teaspoonfuls, and it may be taken plain or mixed with milk.

2. "Hazeline Snow" is a very elegant emollient toilet preparation of hazeline (50 per cent.), lanoline, and presumably oxide of zinc. It rubs in thoroughly, so that it leaves no trace of greasiness behind it. As a remedy for chapped hands this ointment promises to surpass all previous claimants for public favour.

3. The "Compound Menthol Snuff" is stated to be composed of menthol, chloride of ammonium, cocain, lycopodium, and camphor. It is an agreeable combination for insufflation in coryza, and is of course possessed of both anodyne and antiseptic properties.

4. Mr. Hugh Lane, in his work on "Differentiation in Rheumatic Diseases," of which the second edition has just been published by Messrs. J. & A. Churchill, of London, speaks highly of a combination of sulphur, salicylate of quinine, and benzoate of lithium, as an excellent remedy in chronic rheumatic arthritis. Messrs. Burroughs, Wellcome, & Co. have made up his formula in tabloid form. Each sugar-coated tabloid consists of 2 grains of precipitated sulphur, one-third of a grain of salicylate of quinine, 3 grains of benzoate of lithia, saccharin, &c., 100 parts. Five to seven of these tabloids may be taken every morning, and this treatment—according to Mr. Lane—persevered in for some time, hardly ever fails to produce more or less good results—even in obstinate cases of chronic rheumatic arthritis.

INDEX

TO THE NINETY-THIRD VOLUME.

A. B. C. Medical Diary and Visiting List, 1892, *Rev.* 47.
Abscess, hepatic, surgical treatment of, 521.
Abscesses of the brain, multiple, Dr. Parsons on, 194, 231.
Academy of Medicine in Ireland, Royal, 55, 155, 228, 327, 417.
Acromegaly, 360.
Acute yellow atrophy of the liver, 202.
Ætiology of diseases of the skin, by Dr. Walter G. Smith, 1.
Agnew, Dr. D. Hayes, of Philadelphia, 454.
Alcohol in stomach digestion, 220.
Alopecia, universal, Dr. Walter G. Smith on, 336.
Alvarenga prize of the College of Physicians of Philadelphia, 175.
American—Laryngological Association, transactions of the, *Rev.*, 31—Journal of Science, 416.
Anæsthetics, Dr. Dudley Buxton on, 155.
Anatomist, a young, 96.
Anatomy—recent works on, *Rev.*, 39—a novelist's, 91—and physiology, section of, in the Royal Academy of Medicine in Ireland, 159, 417.
Andrology, 227.
Aneurysm of the external iliac artery, Mr. W. T. Stoker on, 231.
Animals, united fractures in, Dr. Frazer on, 62.
Anthrax, remedy, 90.
Antinervine, 176.
Antipyretics, 148.
Antiseptics, 150.
Aortic stenosis, Dr. James Little on, 230.
Apocodein, 153.
Apomorphin, 153.
Aristol, 153.
Army Medical Staff, 256.
Artichoke, 90.
Artificial anus, Mr. Thomson on, 64.
Atlas of illustrations of Pathology, *Rev.*, 321.
Atropin as a hæmostatic, 93.
Auld, Dr. A. G.—pathological histology of bronchial affections, *Rev.*, 208—disclaimer by, 359.
Autometric stopper, 358.

Bacilli tuberculosis—number of, present in sputum, 215.
Bacilli typhosi, Dr. M'Weeney on, 229.
Bacillus lepræ, 551.
Bagot, Dr. W. S., dystocia due to hepatic cyst in fœtus, 60, 265.
Barr, Dr. James, treatment of typhoid fever, *Rev.*, 299.
Barry, Dr., case of ruptured uterus, 241.
Beatty, Dr. Wallace—dietetic treatment of enteric fever, 237, 361—myxœdema successfully treated by massage and hypodermic injections of thyroid gland of a sheep, 452.
Benzoate of β naphthol, 150.
Benzosol, 95.
Bewley, Dr. H. T., report on practice of medicine, 213.
Biological Club, reminiscences of the Dublin, by Dr. Foot, 425.
Bird surgery, 259.
Birmingham, Dr. A.—ossified transverse ligament of the atlas, 159—extreme anomaly of heart, 417.
Bishop, Mr. Alfred, new preparations, 94.
Bites of poisonous serpents, 93.
Blackburn, Dr. J. W., manual of autopsies, *Rev.*, 405.
Bleeding in pneumonia, Mr. Foy on, 13, 69.
Blyth, Dr. John, memorial of, 264.
Boenning, Dr. Henry C., practical anatomy, *Rev.*, 39.
Bones and joints, tuberculosis of, treatment, 532.
Boric acid, 93.
Boyd, Dr. M. A.—case of perforation in enteric fever, 67—enteric fever and its treatment, 70, 112.
Brain, multiple abscesses of the, Dr. Parsons on, 194, 231.

Braithwaite's retrospect of medicine, *Rev.*, 326.
Bramwell, Dr. Byrom, atlas of clinical medicine, *Rev.*, 137, 513.
British—Laryngological and Rhinological Association, 89—Medical Service, 260.
Bromoform in whooping-cough, 213.
Brooklyn Medical Journal, 441.
Brück, Professor Ernst, the human figure, *Rev.*, 52.
Buchanan, Sir George, presentation to, 551.
Burgess, Mr. J. J., opium poisoning, 270, 336.
Burroughs, Wellcome, & Co., Messrs., new preparations, 94, 95, 552.
Buxton, Dr. Dudley, on anæsthetics, 155.
Buzzard, Dr. Thomas, simulation of hysteria by organic disease, *Rev.* 134.

Cactus grandiflorus, 93.
Cæsarean section—Mr. Horne on, 55—Dr. W. J. Smyly on, 57.
Caffyn's jelly-carnis and carnis suppositories, 456.
Campbell, Dr. Harry, nervous organisation of man and woman, *Rev.*, 49.
Cantharadin in phthisis, 154.
Cassell's Year-book of Treatment, *Rev.*, 400.
Cerebellum, 260.
Chicago Medical Recorder, 356.
Chloride of calcium as a hæmostatic, 223.
Chloroform Commission, report of the Hyderabad, *Rev.*, 301, 490.
Cholecystitis, suppurative treatment of, 520.
Cholera, infantile, treatment of, 222.
Clever falsifications, 91.
Clinical records, 72, 539.
Clinique française, 355.
Clouston, Dr. T. S., neuroses of development, *Rev.*, 36.
Cocaïn, 161—and mercurial compounds, 147.
Colon, stricture of sigmoid flexure of the, Mr. J. P. Doyle on, 336.
Colotomy and enterotomy, Mr. W. Thomson on, 118.
Coma, diabetic, treatment of, 221.
Combined spatula, pen, and pencil, 95.
Congress, eleventh International Medical, Rome, 1893, 351.
Contagiousness of leprosy, 263.
Continent, spirit-drinking on the, 355.
Control of Inebriates, Dr. Cosgrave on the, 177, 327.
Corrosive sublimate enemata in dysentery, 218.
Cosgrave, Dr. E. M., control of inebriates, 177, 327.
Councilman, Dr. William T., amœbic dysentery, *Rev.*, 211.
Creolin, 152.
Croly, Mr. H. G., excision of elbow-joint, 333, 334.
Cutaneous tuberculosis by direct inoculation, 220.
Cystitis, salicylic acid in certain forms of, 441.

Dale, Dr. William, inherited consumption, *Rev.*, 402.
Davis, Dr. N. S., consumption, *Rev.*, 401.
Death-rate in Russia, 355.
Dentition, 96.
Dermatitis exfoliativa, Dr. H. C. Tweedy on, 336.
Dermatol, 94.
Diabetic coma, treatment of, 221.
Dickenson, Dr. W. H., Harveian oration, *Rev.*, 140.
Dietetic treatment of enteric fever, Dr. Wallace Beatty, 237, 361.
Digestion, influence of alcohol on stomach, 220.
Diplomas, French and German, 245.
Diseases of the Fallopian tubes, Dr. More Madden on, 18.
Diseases of the skin—ætiology of, Dr. Walter G. Smith on, 1—uncommon forms of, Dr. R. G. Patteson on, 72.
Diseases of the stomach, aids to diagnosis of, Dr. H. C. Tweedy on, 68, 104.
Dispensary medical officers in Ireland—Dr. T. Donnelly on, 275, 329—Mr. P. M. Laffan on, 280, 330.
Diuretin, 154.
Donnelly, Dr. Thomas, position of dispensary medical officers in Ireland, 275, 329.
Dorsum of the foot, irregular nerve-supply to, 161.
Doyle, Mr. J. P., stricture of sigmoid flexure of the colon, 336.
Dublin Biological Club, reminiscences of the, by Dr. Foot, 425.
Dublin—rainfall in 1891, 172—weather observations, 173—pollution of the S.E. foreshore of, Mr. Edgar Flinn, on, 329.
Dutton, Dr. Thomas—indigestion, *Rev.*, 139—reclamation by, 262.
Dysentery—amœbic, 211—treatment of, by corrosive sublimate enemata, 218.
Dysmenorrhœa, Dr. More Madden on, 372, 423.
Dystocia due to hepatic cyst in fœtus, Dr. W. S. Bagot on, 60, 265.

Elbow-joint, excision of, Mr. H. G. Croly on, 334.
Electrical treatment of uterine tumours, 91.
Emphysema of the lungs, 221.

Enemata of corrosive sublimate in dysentery, 218.
Enteric fever—perforation in, Dr. Boyd on, 67—and its treatment, by Dr. Boyd, 70, 112—lesions of, Drs. J. Little and O'Carroll on, 228—Dr. M'Weeney on bacilli of, 229—dietetic treatment of, Dr. Wallace Beatty on, 237, 361—recurrent, with true relapse, Dr. J. W. Moore on, 238, 284—case of protracted, by Dr. Kinkead, 537; laparotomy for perforation in, 551.
Enterotomy and colotomy, Mr. W. Thomson on, 118.
Epidemic skin disease, a new form of, 224.
Epilepsy, traumatic—by Mr. F. T. Heuston, 233—trephining for, 413.
Epistaxis and the hæmorrhoidal flux, Dr. Harkin on, 461.
Equino-varus, Mr. Swan on, 333.
Errors in health reports, 540.
Eucalyptus oil, pure volatile, 261.
Europhene, 145.
Ewald, Dr. C. A., lectures on diseases of the digestive organs, *Rev.*, 514.
Excision of apex of lung, 455.

Fæcal fistula after removal of abdominal tumours, by Mr. M'Ardle, 242.
Fagan, Dr. P. J., irregular nerve supply to dorsum of foot, 161.
Fagge, Dr. Hilton, principles and practice of medicine, *Rev.*, 511.
Fallopian tubes, diseases of the, Dr. More Madden on, 18.
Fever, enteric—treatment of, Dr. M. A. Boyd, 70, 112—lesions of, by Drs. Boyd, Little, and O'Carroll, 67, 228—bacilli of, Dr. M'Weeney on, 229—dietetic treatment of, by Dr. W. Beatty, 237, 361—recurrent, by Dr. J. W. Moore, 238, 284—protracted, by Dr. R. J. Kinkead, 537; laparotomy for perforation in, 551.
Fibro-sarcoma of neck of hen, Mr. Patteson on, 63.
Finlayson, Dr. James, clinical manual, *Rev.*, 46.
Fletcher, Fletcher, & Stevenson's autometric stopper, 358.
Flinn, Mr. Edgar, pollution of the south-eastern foreshore of Dublin, 329; modern methods of sewage treatment, 476.
Fœtid pleural effusions, 214.
Foot, Dr. A. W., reminiscences of the Dublin Biological Club, 425.
Foy, Mr. George M., bleeding and inhalation of oxygen in pneumonia, 13, 69; the Hyderabad Chloroform Commission, *Rev.*, 301, 490.
Fraser, Dr. Alex., exhibits, 159.
Frazer, Dr., united fractures in animals, 62.
French and German diplomas, 1889–90, 245.
Fuller, Dr. R. M. Diseases of the skin, *Rev.* 398.

Garrett, Dr. H., action of water on lead, *Rev.*, 515.
Gastrostomy, 534.
Glycerine jujubes, 94.
Goître, enucleation in the treatment of, 518.
Gonorrhœa, spontaneous dorsal luxation of hip from, 93.
Gorham, Mr. John, tooth extraction, *Rev.*, 145.
Granular effervescent preparations, 94.

Hæmorrhage, new methods of checking, 223.
Hæmorrhoidal flux, Dr. Harkin on the, 461.
Hæmostatic—atropin as a, 93—chloride of calcium as a, 223.
Hamilton, Mr. Edward, ballooning of the rectum, 231.
Hammer-toe, Mr. R. L. Swan on, 333.
Harkin, Dr. Alexander, epistaxis and the hæmorrhoidal flux, 461.
Hartridge, Mr. Gustavus, the ophthalmoscope, *Rev.*, 48.
Hazeline snow, 552.
Health reports, errors in, 540.
Heart, extreme anomaly of, Professor Birmingham on, 417.
Hepatic—abscess, surgical treatment of, 521; cyst in a fœtus, dystocia due to, Dr. W. S. Bagot on, 60, 265.
Heuston, Mr. F. T., trephining for traumatic epilepsy, 233.
Hillier, Mr. T. E., Savill's prescriber's companion, *Rev.*, 134.
Hip, spontaneous dorsal luxation of, from gonorrhœa, 93.
Horne, Mr. Andrew J., presidential address on Cæsarean section, 55.
How to cook a husband, 175.
Huidekorper, Dr. Rush Shippen, age of the domestic animals, *Rev.*, 141.
Hyderabad Chloroform Commission, report of the, *Rev.*, 301, 490.
Hydronaphthol, 153.
Hydronephrosis, intermittent, 523.
Hydro-salpinx, 20.
Hyperpyrexia in rheumatic fever, 551.

Ichthyosis—Dr. O'Carroll on, 67—simplex, Dr. H. C. Tweedy's case of, 237.
Illingworth, Dr. C. R., on influenza, 350

Index catalogue of the library of the Surgeon-General's Office, United States Army, *Rev.*, 402.
Inebriates, control of, by Dr. E. M. Cosgrave, 177, 327.
Infantile cholera, treatment of, 222.
Influenza, clinical and therapeutical notes on, 350.
Inhalation of oxygen in pneumonia, Mr. Foy on, 13, 69.
"In memoriam," Dr. John Blyth, 264.
Inoculation, cutaneous tuberculosis by direct, 220.
International Medical Congress, Rome, 1893, 351.
Intra-cranial—pressure, trephining for the relief of, 407—neurectomy of fifth nerve, 410.
Intussusception of the dying, Dr. M'Hugh on, 62.
Iodopyrin, 96.
Iodphenin, 151.
Ireland—Royal Academy of Medicine in, 55, 155, 228, 327, 417—dispensary medical officers in, Dr. Thomas Donnelly on, 275, 329—Mr. P. M. Laffan on, 280, 330—Local Government Bill, 1892, 352.
Itch ointment, 176.

Jah, Sir Asman, report of the Hyderabad Chloroform Commission, *Rev.*, 301, 490.
Jelly-carnis, 456.
Johns Hopkins Hospital reports, *Rev.*, 42, 211.
Jugular vein, internal, ligature and excision of, 516.

Keeping down the death-rate, 88.
Ker, Dr. Alice, motherhood, *Rev.*, 203.
Kidd, Dr. Fred. W., case of hystero-myomectomy, 421.
Kinkead, Dr. R. J., case of protracted enteric fever, 537.
Klebs and Crudeli on malaria, *Rev.*, 404.
Koch's consumption cure, 91.

Laffan, Mr. P. M., residential disabilities of medical officers in rural districts, 280, 330.
Lafleur, Dr. Henry A., amœbic dysentery, *Rev.*, 211.
Landry's paralysis, 216, 217.
Lane, Mr. Hugh, tabloids of benzoate of sodium, sulphur, and salicylate of quinine, 552.
Lane, Mr. J. Lilly, pin removed from bladder, 57.
Laparotomy for intestinal perforation in enteric fever, 551.
Laryngological and Rhinological Association, British, 89.
Laryngology, recent works on, *Rev.*, 31.
Lead paralysis, pathology of, 219.
Lead-poisoning in New South Wales, 349.
Le Fort, Professor Paul, pratique journalière des Hôpitaux de Paris, *Rev.*, 131.
Lepræ, bacillus, 551.
Leprosy—in New South Wales, 88—contagiousness of, 263.
Letts's medical diary for 1892, *Rev.*, 48.
Lévoisne, 176.
Ligature and excision of internal jugular vein, 516.
Light reflex on retinal vessels, Mr. Story on, 419.
Lithium, benzoate of, tabloids, 552.
Little, Dr. James—lesions of enteric fever, 228—aortic stenosis, 230.
Liver—cyst of, in fœtus, causing dystocia, Dr. Bagot's case of, 60, 265—acute yellow atrophy of the, 202—new method of ascertaining the size of the, 217.
Local Government (Ireland) Bill, 1892, 352.
Lung, excision of apex of, 455.
Lungs, emphysema of the, 221.
L'Univers médicale, 356.
Luxation of hip, spontaneous dorsal, from gonorrhœa, 93.
Lympho-sarcoma, mediastinal, Dr. J. W. Moore on, 199.
Lysol, 92.

Macan, Professor A. V., exhibits, 241.
M'Ardle, Mr., fæcal fistula after removal of abdominal tumours, 242.
M'Hugh, Dr., intussusception of the dying, 62.
M'Weeney, Dr., modern methods of isolating typhoid bacilli, 229.
Madden, Dr. T. More—diseases of the Fallopian tubes, 18—oöphoritis, 186—Memoirs of Richard Robert Madden, *Rev.*, 322—dysmenorrhœa, 372, 423.
Malthus, 339.
Malto-ricine, 552.
Malt pastiles, Rowntree's, 358.
Marchiafava and Celli, on the origin of melanæmia, *Rev.*, 404.
Massage, 92—in myxœdema, 452.
Materia medica and therapeutics, report on, by Dr. Walter G. Smith, 146.
Measles, microbe of, 424.
Mediastinal lympho-sarcoma, Dr. J. W. Moore on, 199, 231.
Medical—diaries and visiting lists for 1892, *Rev.*, 47—Services, examination papers for H.M., 256—officers in Ireland, dispensary, Dr. Thomas Donnelly on, 275, 329—Mr. P. M. Laffan on, 280, 330—Congress, Eleventh International, 351.

Medical annual, 1892, *Rev.*, 399.
Medicine—in Ireland, Royal Academy of, 55, 155, 228, 327, 417—section of, in the Royal Academy of Medicine in Ireland, 67, 237, 336—report on practice of, by Dr. H. T. Bewley, 213—in Puebla. 356.
Menthol snuff, 552.
Meteorological notes, 84, 167, 251, 345, 447, 546.
Microbe of measles, 424.
Microcidine, 92.
Middlesex Hospital reports, *Rev.*, 400.
Moore, Dr. J. W., sanitary and meteorological notes, 79, 162, 246, 340, 442, 541—mediastinal lympho-sarcoma, 199, 231—recurrent enteric fever with relapse, 238.
Morton, Mr. A. Stanford, refraction of the eye, *Rev.*, 54.
Multiple abscesses of the brain, Dr. Parsons on, 194, 231.
Muskett, Mr. Philip E., prescribing and treatment in the diseases of infants and children, *Rev.*, 133.
Myles, Dr. Thomas, nephro-lithotomy, 66, 97—recent specimens, 333.
Myoma uteri, Dr. W. J. Smyly on, 55.
Myxœdema treated by massage and hypodermic injections of thyroid gland of a sheep, Dr. Wallace Beatty on, 452.

Naphthaline as a vermifuge, 219.
Nephro-lithotomy, Mr. Myles on, 66, 97.
Nerve-supply to dorsum of foot, irregular, Dr. P. J. Fagan on, 161.
Neugebauer on spondylolisthesis, *Rev.*, 404.
Neurectomy of fifth nerve, intracranial, 410.
New preparations and scientific inventions, 94, 261, 357, 456, 552.
New South Wales, lead-poisoning in, 349.
New Sydenham Society's publications, *Rev.*, 321, 404, 514.
Norman, Mr. Conolly, exhibition of specimens, 420.
Nose, diseases of the, *Rev.*, 32.

Obstetrics, section of, in the Royal Academy of Medicine in Ireland, 55, 155, 241, 420.
O'Carroll, Dr.—ichthyosis, 67—lesions of enteric fever, 228.
Officers in Ireland, dispensary medical—Dr. Thomas Donnelly on, 275, 329—Mr. P. M. Laffan on, 280, 330.
Oöphoritis, Dr. More Madden, 186.
Opium—strychnin as an antidote to, 91—poisoning, Mr. J. J. Burgess on, 270, 336.
Ostrom, Mr. Kurre W., massage and the Swedish movements, *Rev.*, 397.
Oxygen, inhalation of, in pneumonia, Mr. Foy on, 13, 69.

Paralysis—acute ascending, Landry's, 216, 217—pathology of lead, 219.
Parke, Surgeon T. H., personal experiences in Equatorial Africa, *Rev.*, 386.
Parsons, Dr. Alfred R., multiple abscesses of the brain, 194, 231.
Pathology—section of, in the Royal Academy of Medicine in Ireland, 62, 228—atlas of illustrations of, *Rev.*, 321.
Patteson, Mr. R. Glasgow—fibro-sarcoma of neck of hen, 63—uncommon forms of skin diseases, 72—report on progress of surgery, 406, 516.
Periscope, 88, 175, 256, 350, 452, 551.
Phenacetin in influenza, 150.
Phenacoll hydrochlorate, 149.
Physiology, section of Anatomy and, in the Royal Academy of Medicine in Ireland, 159, 417.
Piffard, Dr. H. G., diseases of the skin, *Rev.*, 398.
Pin removed from bladder, by Mr. J. J. Lilly Lane, 57.
Pleural effusions—fœtid 214—treatment of, 221.
Pneumonia, bleeding and inhalation of oxygen in, by Mr. Foy, 13, 69.
Poisoning—by the external application of tobacco, 30—by salol, 213—by opium, Mr. Burgess on, 270, 336.
Pollution of the south-eastern foreshore of Dublin, Mr. Edgar Flinn on the, 329.
Potter, Dr. Saml. O. L., handbook of materia medica, *Rev.*, 207.
Poultices, Sacklin's ready-made, 357.
Practice of medicine, report on, by Dr. Bewley, 213.
Pratt, Dr., recent specimens, 333.
Preparations, new, 94, 261, 357, 456, 552.
Preservative for steel pens, 356.
Puebla, medicine in, 356.
Pye-Smith, Dr., Hilton-Fagge's principles and practice of medicine, *Rev.*, 511.
Pyo-salpinx, 20.

Quain's elements of anatomy, *Rev.*, 41.
Quassin, 54.
Quinine synthesis, 91.

Rainfall in Dublin in 1891, 172.
Raynaud, on local asphyxia, *Rev.*, 404.
Raynaud's disease, Dr. Patteson on, 72.
Reclamation, by Dr. Thomas Dutton, 262.
Records, clinical, 72, 537.

Rectum, ballooning of the, Mr. Edward Hamilton on, 231.
Recurrent enteric fever with relapse, Dr. J. W. Moore on, 238, 284.
Relapse in enteric fever, Dr. J. W. Moore on, 238, 284.
Reminiscences of the Dublin Biological Club, by Dr. A. W. Foot, 425.
Report of the Hyderabad Chloroform Commission, *Rev.*, 301, 490.
Reports of Middlesex Hospital, *Rev.*, 400.
Reports, special—materia medica and therapeutics, by Dr. Walter Smith, 146—practice of medicine, by Dr. H. T. Bewley, 213—progress of surgery, by Dr. R. Glasgow Patteson, 406, 516.
Residential disabilities of medical officers in rural districts, Mr. P. M. Laffan on, 280.
Resorcin, 92.
Rheumatism, acute, hyperpyrexia in, 551.
Rhinological Association, British Laryngological and, 89.
Rhinoscleroma, Mr. W. G. T. Story on, 457.
Roberts, Sir William, digestion and diet, *Rev.*, 210.
Rome, Eleventh International Medical Congress to be held at, 351.
Roose, Dr. Robson, nerve prostration, *Rev.*, 53.
Rose, Mr. William, harelip and cleft palate, *Rev.*, 396.
Rowntree, Messrs. malt pastiles, 358.
Royal Academy of Medicine in Ireland, 55, 155, 228, 327, 417.
Rupture of uterus, Dr. Barry on, 241.
Russia, death-rate in, 355.

Sacklin's ready-made poultices, 357.
Salicylbromanilide, 176.
Salicylic acid in cystitis, 441.
Salol, 92—death after a small dose of, 213.
Salpingitis, 19.
Sanitary and meteorological notes, 79, 162, 246, 340, 442, 541.
Saponin, 146.
Saundby, Dr. Robert, Ewald's diseases of the digestive organs, *Rev.*, 514.
Savill, Dr. Thomas—prescriber's companion, *Rev.*, 134—a new form of skin disease, 224.
Schäfer, Mr. E. A., Quain's elements of anatomy, *Rev.*, 41.
Scientific inventions, 94, 261, 357, 456.
Serpents, bites of poisonous, 93.
Sewage treatment, modern methods of, Mr. D. E. Flinn on, 476.
Sex, determination of, 260.
Sigmoid flexure of colon, stricture of the, Mr. J. P. Doyle on, 336.
Sisley, Dr. Richard, epidemic influenza, *Rev.*, 44.
Skin, diseases of the—ætiology of, Dr. Walter G. Smith on, 1—uncommon forms of, Dr. Patteson on, 72—a new form of, Dr. Savill on, 224.
Smith, Dr. Walter G.—ætiology of diseases of the skin, 1—report on materia medica and therapeutics, 146—universal alopecia, 336.
Smyly, Dr. W. J.—myoma uteri, 55—Cæsarean section, 57 — pyosalpinx, 241—cancer uteri, 241.
Soluble pearl-coated pills, 94.
Spatula, pen, and pencil combined, 95.
Spinal surgery, 525.
Spirit drinking on the Continent, 355.
Sputa, number of tubercle bacilli in, 215.
State medicine, section of, in the Royal Academy of Medicine in Ireland, 327, 329.
Steel pens, preservative for, 356.
Stoker, Mr. Thornley, aneurysm of the external iliac artery, 231.
Stomach—diagnosis of diseases of the, Dr. H. C. Tweedy on, 68, 104—digestion, influence of alcohol on, 220.
Stopper, Fletcher & Stevenson's autometric, 358.
Story, Mr. J. B., cause of light reflex on retinal vessels, 419.
Story, Mr. W. G. T., on rhinoscleroma, 457.
Strychnin as an antidote to opium, 91.
Sulphite of zinc, 151.
Sulphonal, 154—new method of giving, 214.
Suppositories, carnis, 456.
Surgery—section of, in the Royal Academy of Medicine in Ireland, 64, 231, 333—bird, 259—report on, by Mr. R. G. Patteson, 406, 516.
Symmetrical gangrene of the extremities, Mr. R. G. Patteson on, 72.
Synthesis of quinine, 91.
Swan, Mr. R. L.—rectification of equinovarus, 333—hammer-toe, 333.

Tenotomy by a new method, 529.
Thane, Mr. George D., Quain's elements of anatomy, *Rev.*, 41.
Therapeutical novelties, 552.
Therapeutics, report on, by Dr. Walter G. Smith, 146.
Thin, Dr. George, leprosy, *Rev.*, 394.
Thompson, Dr. W. H., descending degeneration in a monkey, 420.
Thomson, Mr. William—artificial anus, 64—enterotomy and colotomy, 118.
Thorne, Dr. R. Thorne, diphtheria, *Rev.*, 127.
Timbury's eucalyptus oil, 261.

Tobacco, poisoning by the external application of, 30.
Torticollis, spasmodic, 528.
Transactions of the American Laryngological association, 1890, *Rev.*, 31.
Traumatic epilepsy, trephining for, 233, 413.
Treatment of enteric fever—Dr. Boyd on, 112—discussion on, 70—Dr. Burnley Yeo on, 132—recent works on, *Rev.*, 131.
Trephining—for traumatic epilepsy, 413—by Mr. F. T. Heuston, 233—for relief of intra-cranial pressure, 407.
Treves, Mr. Frederick, manual of operative surgery, *Rev.*, 292.
Tubercle bacilli, number of, present in sputa, 215.
Tuberculosis—cutaneous, by direct inoculation, 220—of the urinary bladder, 529—of bones and joints, treatment of, 532.
Tweedy, Dr. H. C.—recent aids to the diagnosis and treatment of diseases of the stomach, 68, 104—xeroderma, 237—dermatitis exfoliativa, 336.
Typhoid bacilli, modern methods of isolating, Dr. M'Weeney on, 229.

University of Vienna, 416.
Urinary bladder, tuberculosis of the, 529.
Uterine tumours, electrical treatment of, 91.
Uterus, rupture of, Dr. Barry on, 241.

Vermifuge, naphthaline as a, 219.
Vienna University of, 416.
Vital statistics, 79, 162, 246, 340, 442, 541.

Waller, Dr. Augustus W., introduction to human physiology, *Rev.*, 51.
Wand, Mr. Stephen, new preparations, 94.
Watson, Mr. Spencer, diseases of the nose, *Rev.*, 32.
Wheeler, Mr. W. I, recent specimen, 333.
Whitla, Dr. William, dictionary of treatment, *Rev.* 142.
Whooping-cough—another remedy for, 176—bromoform in, 213.
Wolff, Mr. Henry W., watering places of the Vosges, *Rev.*, 403.
Woods, Dr. Robert H., on a physical theorem, 159.
Works on—laryngology, *Rev.*, 51—anatomy, *Rev.*, 39.
Wright's medical annual, *Rev.* 399.

Xeroderma, Dr. Tweedy's case of, 237.

Year-book of treatment, 1892, *Rev.*, 400.
Yeo, Dr. J. Burney, treatment of enteric fever, 132.

Zinc sulphite, 151.

Printed by JOHN FALCONER, 53 Upper Sackville-street, Dublin.

DIET IN DIABETES.

"The form of Diabetes in which a particular dietary is necessary is that known to medical men as Diabetes Mellitus. It is characterised by the passage of large quantities of water containing sugar, great thirst, and a voracious appetite; whilst at the same time the patient feels very weak and loses a great deal of flesh. It is held due to a disturbance of the glycogenic function of the liver—that is, the power of the liver to store up the starch and sugar of the food in the form of glycogen, which glycogen is subsequently given off as glucose and carried to other parts of the body as required. When this mechanism is disturbed,

AN EXCESS OF GLUCOSE

is passed from the liver and thus passes off in the water, the tissues not receiving their proper nutriment. It will thus be seen that our aim in dieting such patients should be to limit the amount of sugary elements. They may eat butcher's meat (except liver), game, poultry, extracts of meat—of which the best is certainly †Caffyn's Liquor Carnis, which contains nourishing properties from the albuminoids present but absent in all other meat preparations—they may eat fish, most salad vegetables, cheese, butter, gluten bread, almond biscuits, bran biscuits, and unsweetened blancmange or jelly. They may drink tea and cocoa from nibs combined with †Caffyn's Liquor Carnis, which also makes a most refreshing and nourishing drink with fresh lemon juice or lime-juice cordial and soda water, dry sherry, claret, burgundy, hock, brandy, and whisky. They must

AVOID SUGAR AND

starch in every form. The various articles of diet which may be prepared from †Caffyn's Liquor Carnis will also be found sufficiently sweet; for this substance, in addition to the pure juice expressed from the meat, contains also glycerine, which gives it a sweet and pleasant taste. We know of nothing which should be of greater service to diabetic patients than this preparation, recently introduced into Great Britain from Australia, which is a stimulant and at the same time a true food, and sweet enough to suit the most fastidious taste.

† Caffyn's Liquor Carnis (Beef Juice).—"A nourishing fluid, consisting of Uncooked Juice of Meat or Muscle-plasma, permanently preserved by the addition of a definite quantity of a Carbohydrate. A valuable food and tonic for infants and invalids."—*The British Medical Journal.*

NOTE.—Caffyn's Liquor Carnis, Malto-Carnis, and Allied Products of Raw-Beef-Juice are prepared from British Beef only—in London—at the Laboratories of the Liquor Carnis Co. in Farringdon-st.—Smithfield Works—close to Smithfield Market.

FOR DISEASES OF THE STOMACH, AND INDIGESTION

Lactopeptine.

DOSE MEASURE
LACTOPEPTINE
LACTOPEPTINE contains the five active agents of digestion, combined in the same proportion as they exist in the human stomach, and will digest food in a manner identical to that obtained under the influence of the natural gastric juice.
LACTOPEPTINE will be found far superior to all other remedies in Indigestion, Dyspepsia, and kindred diseases.
Also, particularly indicated in Anemia, General Debility, Chronic Diarrhœa, Constipation, Headache, Vomiting and Nausea in Pregnancy, and impoverished condition of the blood.
PRICE, 4/6.
PREPARED SOLELY BY
JOHN M. RICHARDS,
92 & 93, GT. RUSSELL ST.,
LONDON.

Exact Size and Shape of Bottle.

It is conclusively ascertained that LACTOPEPTINE will bring about the Digestion of Food in a manner perfectly identical to that obtained under the influence of the natural gastric juice.

THE extended use and adoption of **LACTOPEPTINE** by the **MEDICAL PROFESSION** affords indisputable evidence that its therapeutic value has been thoroughly established in cases of **Indigestion, Dyspepsia, Loss of appetite, Impoverished Blood, General Debility, Intestinal and Wasting Diseases of Children, Chronic Diarrhœa, Constipation, Vomiting in Pregnancy, Headache, Nausea, and all diseases arising from imperfect nutrition.**

From "RETROSPECT OF PRACTICAL MEDICINE AND SURGERY," *July*, 1877.

"A glance at the formula of **LACTOPEPTINE** would convince even the most sceptical of the valuable results that must ensue through its administration. It is a combination of all the digestive agents, consequently can never be administered without giving the utmost satisfaction.

Extract from Certificate of Composition and Properties, by

Professor ATTFIELD, Ph.D.,

Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain.

LONDON, *May 3rd*, 1882.

I now report that the almost inodorous and tasteless pulverulent substance termed Lactopeptine is a mixture of the three chief agents which enable ourselves and all animals to digest food. That is to say, Lactopeptine is a skilfully-prepared combination of meat-converting, fat-converting, and starch-converting materials, acidified with those small proportions of the acids that are always present in the healthy stomach; all being disseminated in an appropriate vehicle, namely, powdered sugar of milk. The acids used at the factory—lactic and hydrochloric—are the best to be met with, and are perfectly combined to form a permanent preparation; the milk sugar is absolutely pure; the powder known as "diastase," or starch-digesting (bread, potato, and pastry-digesting) material, as well as the "pancreatin," or fat-digesting ingredient, are as good as any I can prepare, while the pepsin is much superior to that ordinarily used in medicine. Indeed, as regards this chief ingredient,—pepsin—I have only met with one European or American specimen equal to that made and used by the Manufacturer of Lactopeptine. A perfectly parallel series of experiments showed that any given weight of acidified pepsin alone at first acts somewhat more rapidly than Lactopeptine containing the same weight of the same pepsin. Sooner or later, however, the action of the Lactopeptine overtakes and outstrips that of pepsin alone—due, no doubt, to the meat-digesting, as well as fat-digesting, power of the pancreatin contained in the Lactopeptine. My conclusion is that Lactopeptine is a most valuable digesting agent, and superior to pepsin alone. JOHN ATTFIELD.

One of the chief features of **LACTOPEPTINE** (and the one which must gain it a preference over all digestive preparations) is, that it *precisely represents in composition* the *natural digestive juices* of the *stomach, pancreas*, and *salivary glands*, and will therefore readily dissolve all foods necessary to the recuperation of the human organism.

Dose.—ONE-THIRD that of cheap substitutes, and giving results not within the compass of any other agent.

Prices of Lactopeptine:—1 oz., 4s. 6d.; 4 oz., 14s.; 8 oz., 27s.

Unstamped, for Dispensing Only—Quarter Pound (4 oz.), 12s.; Half-pound (8 oz.), 24s.

Lactopeptine is prepared solely by JOHN M. RICHARDS,

(Late Great Russell Street) **46 Holborn Viaduct, London, E.C.**

NOTE.—A 64-page pamphlet and Sample of Lactopeptine sent to the Medical Profession, on request.

CLUB ALE. CLUB SODA. CLUB LEMONADE.

Only Makers of Sparkling "**MONTSERRAT,**"

The Drink for the Gouty and Rheumatic.

Bullock's Pepsina Porci.

DOSE— 2 to 4 grains

Since the introduction by Dr. LIONEL BEALE of PEPSINA PORCI, Mr. BULLOCK has devoted special attention to its manufacture.

Bullock's Acid Glycerine of Pepsine.

DOSE— 1 to 2 drms.

Possesses at least three times the digestive power of (and in most cases considerably more than) any other preparation of Pepsine and Glycerine, or fluid form of Pepsine whatever.

May be prescribed with most substances compatible with Acids.
In 4 oz., 8 oz., and 16 oz. Bottles, and in Bulk.

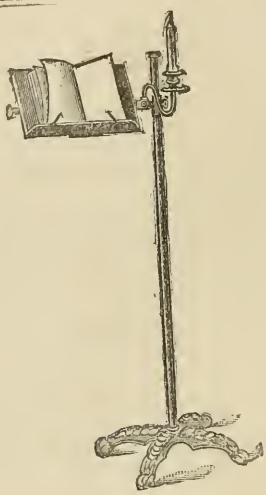
The published experiments of G. F. DOWDESWELL, Esq., M.A., Cantab., F.C.S., F.L.S., &c., Dr. PAVY, Professor TUSON, the late Professor GARROD, and others, conclusively demonstrate the marked superiority of BULLOCK'S PEPSINA PORCI AND ACID GLYCERINE OF PEPSINE over every other Pepsine, or preparation of Pepsine—ENGLISH, FRENCH, GERMAN, OR AMERICAN.

*** *In prescribing either of the above preparations, it is suggested to insert in parentheses, as follows* (**BULLOCK**).

J. L. BULLOCK & CO.,

3 Hanover-street, Hanover-square, London, W.

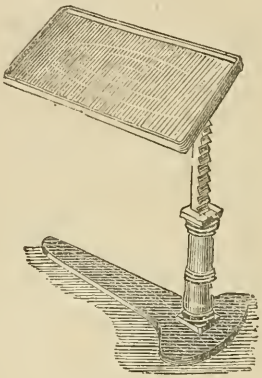
Leveson & Son's Invalid Furniture.



READING STAND.

Brass Column and Bronzed Stand.

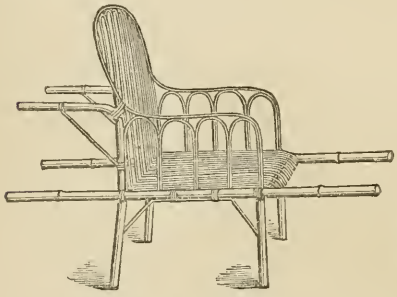
Polished Walnut Desk - -	£1 1 0
Circular Tube - - - -	0 7 6
Brass Lamp - - - -	0 10 6



BED TABLE.

This can also be used, as shown above, as a Reading or Writing Desk.

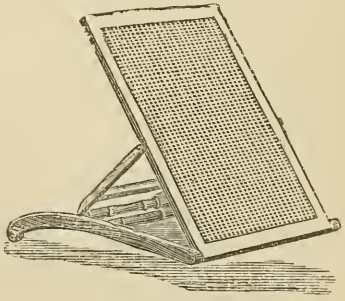
Birch polished any colour -	£2 5 0
Walnut, Mahogany, or Oak -	3 3 0



CARRYING CHAIR.

This light Carrying Chair is made entirely of Cane and Malacca, with Bamboo Handles, and is very comfortable.

Prices - - 21/-, 25/-, 35/-, and 42/-



BED REST,

From 12/6- to 21/-

Spinal Board, £1, £1 10s.; and £1 15s.
Spinal Carriages from 8 to 20 Guineas.

Full particulars on application

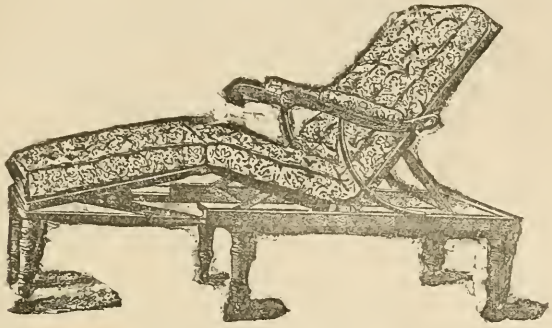
AGENTS FOR IRELAND:

FANNIN & COMPANY,

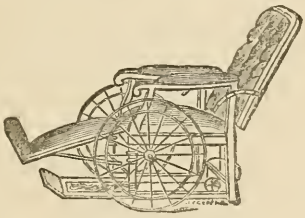
Surgical Instrument Makers,

41 GRAFTON STREET, DUBLIN.

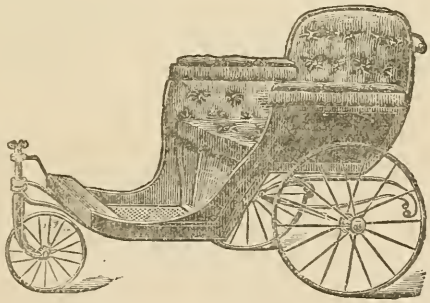
Leveson & Son's Invalid Furniture.



ILKLEY COUCH.
This Couch can be adjusted to any required position. Price from 2 to 10 Guineas.



MERLIN CHAIR.
Made of solid wood, Oak or Mahogany, from 4½ to 17 Guineas.



INVALID'S CARRIAGE, from £8 8s.

WICKER BATH-CHAIRS, from **3** *to* **6** *GUINEAS.*
LEG RESTS, INVALID WATER BEDS and CUSHIONS, AIR CUSHIONS CRUTCHES and every description of Surgical and Medical Appliances for invalids.

AGENTS FOR IRELAND:

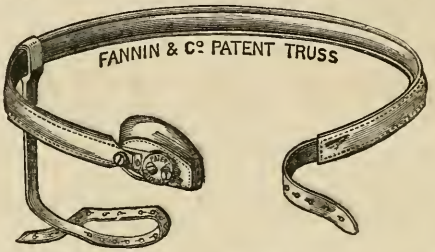
FANNIN & COMPANY,

Surgical Instrument Makers,

41 GRAFTON STREET, DUBLIN.

A Complete Catalogue sent free on application.

FANNIN & CO. PATENT TRUSS.



Price: SINGLE, £1 1s.; DOUBLE, £1 11s. 6d.

The only Truss ever invented on correct Surgical and Anatomical principles for the relief and cure of Hernia.

TO BE HAD ONLY FROM THE MAKERS,

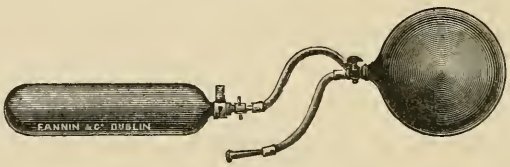
FANNIN & COMPANY,

Surgical Instrument Manufacturers,

41 GRAFTON STREET, DUBLIN.

Registered Telegraph Address—"FANNIN, DUBLIN."

OXYGEN INHALATION.



Apparatus for the inhalation of oxygen gas, as suggested by Dr. Foy.

Price 10s. 6d., post free.

Descriptive pamphlet sent on application.

FANNIN & COMPANY,

Surgical Instrumemt Makers, Medical Booksellers, and Publishers,

41 GRAFTON-STREET, DUBLIN.

[*Telegram Address*—"FANNIN, DUBLIN."]

PRICE OF THE APPARATUS

FOR THE

INHALATION OF OXYGEN GAS,

AND

Particulars respecting the supply of the Gas.

The Price of the Apparatus is **10/6.**

The Oxygen Gas is supplied in cylinders containing 10, 20, and 40 cubic feet, at the rate of 4*d.* and 5*d.* per cubic foot, according to the quantity required. For cases in the country, where a supply cannot be obtained at a moment's notice, FANNIN & Co. recommend that the larger cylinders should be ordered in the first instance. These cylinders are kept in stock, ready for immediate despatch on receipt of a letter or telegram.

Rate of Hirage of Cylinders.—Hirage is charged at the rate of 6*d.* per week for the smaller sizes, the larger sizes in proportion. The first six days are allowed free.

The cylinders can be purchased if desired.

Empty Cylinders.—It is requested that they should be returned at once.

CAUTION.—No oil or grease must on any account be used for the screws or fittings of the cylinders.

FANNIN & COMPANY,

Surgical Instrument Makers,

MEDICAL BOOKSELLERS AND PUBLISHERS,

41 GRAFTON STREET, DUBLIN.

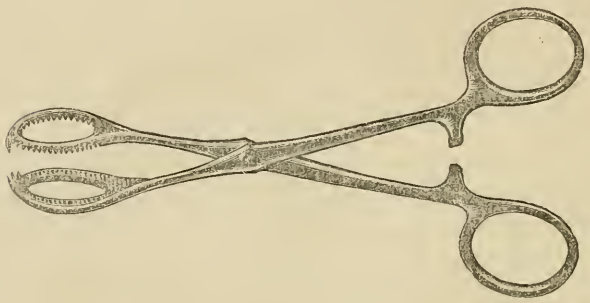
Telegraphic Address—"FANNIN, DUBLIN."

DR. HEUSTON'S FORCEPS

FOR THE

REMOVAL OF STRUMOUS GLANDS, &c.

Price 10s. 6d.



"HAVING experienced considerable difficulty in the removal of strumous glands, owing to their friable character, when caught with the ordinary clip forceps, I had this instrument (as shown) made by Messrs. FANNIN & Co., and find it most useful for the purpose. The blades coming in contact only at the apex, the gland is received within the fenestrated portion, and thus is not broken. The instrument will also be found useful in the removal of any morbid growth.

"FRANCIS T. HEUSTON, M.D., F.R.C.S.I.,
Surgeon, Adelaide Hospital, Dublin;
Professor of Anatomy, Royal College of Surgeons, Ireland
Consulting Surgeon, Coombe Hospital, Dublin."

DECEMBER, 1891.

TRADE MARK.

Contractor to H.M. Government.

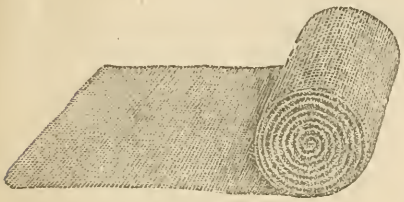
TELEGRAMS:— LISTERISM, LONDON.

Lister's Antiseptic Dressings,

OF EVERY DESCRIPTION. GENUINE QUALITY ONLY.

Manufactured under the instructions of Prof. Sir JOSEPH LISTER, Bart., F.R.S., F.R.C.S., &c., since their introduction in 1870, by JOHN MILNE ONLY, Antiseptic Dressings Factory, Ladywell, London.

GAUZES.



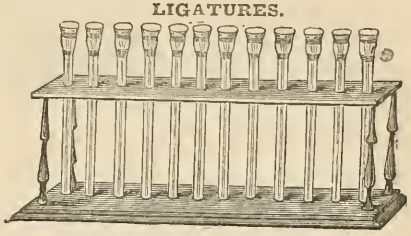
(The most largely used.)

DOUBLE CYANIDE GAUZE,

Put up in 100 and 12 yard rolls, and as used in the leading Hospitals at Home and Abroad.

Also see List.

LIGATURES.



(The most largely used.)

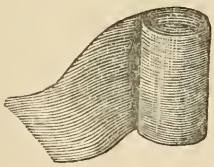
ANTISEPTIC (Carb.) LIGATURES.

IN STRAIGHT (12 inch) LENGTHS, SUSPENDED BETWEEN FIXED PLUGS.

No waste, entanglement, leakage, cracks, inconvenience, or soilings of the hands or surroundings.

Also see List

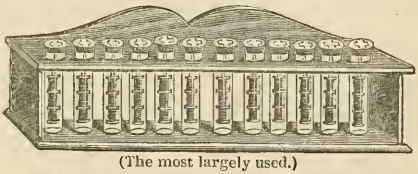
BANDAGES.



ANTISEPTIC ALEMBROTH BANDAGES. POROUS OPEN-WOVE BANDAGES,

for Plaster of Paris. *Also see Illustrated Price List.*

SUTURES.



(The most largely used.)

ANTISEPTIC SILK SUTURES.

ON STOPPER-FIXED REELS.

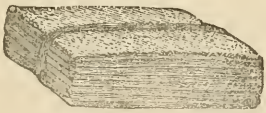
Treble usual quantities. Three distinct sizes in each flask. *Also see List.*

LIGATURES.

Antiseptic (Carb.) Ligatures,

on stopper-fixed reels. These are the well-known reel-fitted Octagons. Each bottle contains three distinct sizes unless otherwise ordered.

WOOLS.



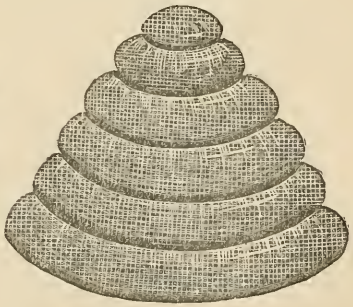
ANTISEPTIC ALEMBROTH COTTON WOOL

(The most largely used).

Also Salufer, Sanitas, Carbolic, Eucalyptus, Thymol, Salicylic, Iodoform, Double Cyanide Wools, &c.

Also see List.

TAMPONS.



'Tampons,' 'Plugs,' 'Sponges,' Alembroth, Sanitas, Thymol, Carbolic, &c.

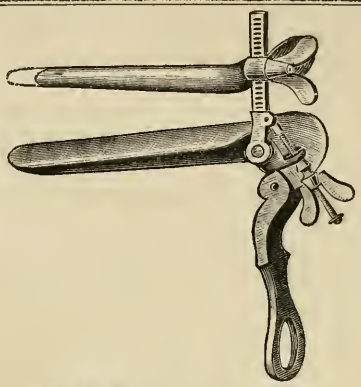
All Shapes and Sizes. *See List.*

THE WHOLE OF ABOVE ARE KEPT IN STOCK BY

Messrs FANNIN & CO., 41 GRAFTON-STREET, Dublin, SOLE AGENTS for Ireland.

Price List on application.

FANNIN & COMPANY,

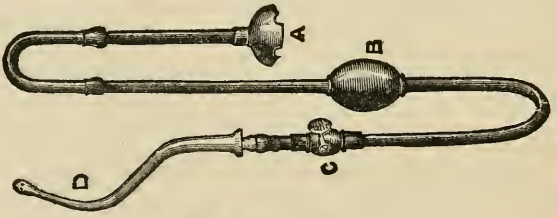


VAGINAL SPECULUM.
As used at the Rotunda Hospital, Dublin.
Price 20s.

DOUCHING CURETTE.
As used at the Rotunda Hospital, Dublin.
Price 9s.

UTERINE CANULA (for Cervical Medication).
As used at theRotunda Hospital, Dublin.
Price 8s. 6d.

All these Instruments are made entirely of metal, to enable them to be boiled and antisepticised.



UTERINE DOUCHE.
As used at the Rotunda Hospital, Dublin.
Price 7s. 6d.

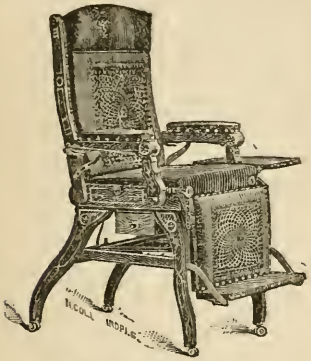
FEMALE GLASS CATHETER, 4d. GLASS UTERINE DOUCHE TUBE, 4d.

41 GRAFTON-STREET, DUBLIN.

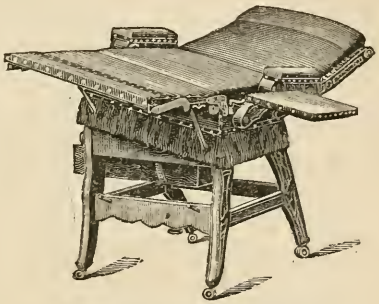
THE ROBERTS & ALLISON

Physicians' and Surgeons' Operating Chair.

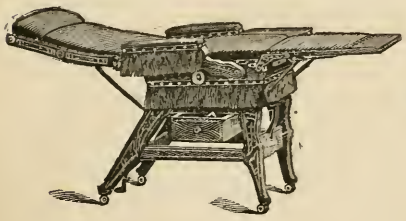
This Chair has been specially constructed to meet the wants and requirements of the Profession. It is simply constructed, with perfect adjustment, strength, and convenience, without those complications noticeable in other chairs. It can be easily moved to its different positions by the operator without changing his position.



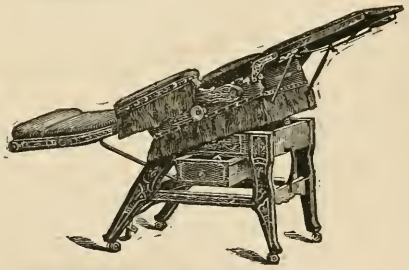
Normal Position.
Can be also used as an Ordinary Office Chair.



Lateral or Sinus Position.
This position is important to gynæcologists, and in treatment of rectal diseases, with side table for instruments.



Horizontal Position



For Anæsthesia Narcosis.
This position is very important in cases of hæmorrhage or suspended animation, and can be obtained instantly. The patient can be rocked up and down by pressing the lever.

It can also be placed in the dorsal and genito-urinary positions. This Chair has given the greatest satisfaction wherever used, and is suitable for private and hospital practice.

Price of above, £15.

Any further information and particulars can be obtained from

FANNIN AND COMPANY,
Sole Agents for Ireland,
41 GRAFTON-STREET, DUBLIN.

LORIMER'S COCA WINE.

Prepared from COCA LEAVES (Erythroxylon Coca).

In Bottles, 36/- per dozen.

LORIMER'S HYPOPHOSPHITES.

"SYRUP HYPOPHOSPH. CO. (LORIMER)."

Among the principal merits of this preparation may be enumerated:—

1st.—It is not a quack preparation or secret nostrum; the formula is printed on every label, and the price is moderate.

2nd.—The formula is original, founded upon scientific principles, and has stood the test of practical experience. There is no other preparation of the hypophosphites which contains so large a proportion (about six grains to the fluid drachm) of the salts employed.

3rd.—All its constituents are in perfect and permanent solution, the last dose being identical, under all circumstances, with the first. There is consequently no possibility of danger from the precipitation of strychnine, as is the case with preparations that require shaking to distribute the dose.

4th.—The formula being stated on every label, the physician is enabled to *vary the dose* according to the requirements or idiosyncrasies of the individual case.

5th.—It is pleasant to take, and can readily be prescribed for children.

6th.—It is neutral, or very slightly alkaline, and can therefore be taken without ill effect by persons afflicted with sensitive stomachs, which would probably reject acid or strongly alkaline preparations.

Protected by Her Majesty's Royal Letters Patent.

IODISED OIL

(Oleum Iodi).

FOR OUTWARD APPLICATION ONLY.

ADVANTAGES.—Is readily absorbed. Does not stain the skin. May be applied to the most delicate skin without irritation.

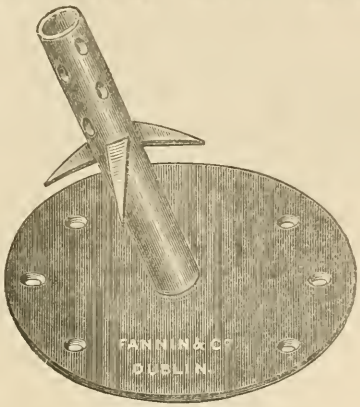
In 16-oz. Bottles, 6/- each.

Price List of Lorimer's Specialities sent on application.

LORIMER & CO., Britannia Row, LONDON, N.,

WHOLESALE DRUGGISTS AND MANUFACTURING CHEMISTS.

DR. HEUSTON'S EMPYEMA TUBE,



Price 3/-.

MANUFACTURED BY

FANNIN & COMPANY,

41 GRAFTON-STREET,

DUBLIN.

J. F. MACFARLAN & Co.

MANUFACTURERS OF

ANTISEPTIC DRESSINGS and APPLIANCES,

INCLUDING

Materials used in the LISTERIAN System of SURGERY, and prepared from the Special Formulæ of Sir Joseph Lister—

Carbolized Gauze,
Double Cyanide Gauze,
(The most recently introduced LISTERIAN Dressing)
Iodoform Gauze,
Oiled Silk Protective,
Boric Lint,
Sal Alembroth Wool,
Salicylic Wool,
Sublimate Wool,
Ligatures, Sutures,
Pink Jaconet, &c.

EDINBURGH Address— 17 & 18 NORTH BRIDGE.

LONDON Address— 71 COLEMAN-STREET, E.C.

TO BE HAD ALSO FROM Messrs. FANNIN & CO., DUBLIN.

And all Wholesale and Export Houses.

THE ORIGINAL RAW FOOD EXTRACT.

(Prescribed by the Medical Profession since 1878.)

AN IDEAL FOOD.

BOVININE

A RAW FOOD EXTRACT

IT STANDS ALONE.

THE VITAL PRINCIPLES OF BEEF CONCENTRATED.

CONTAINING 20 PER CENT. OF COAGULABLE ALBUMEN.

Its ready assimilability, its marked nutritive quality, its stimulating power, and restorative force, make BOVININE a most valuable aid in all treatment where a true nutrient is indicated.

SAMPLES free to the Medical Profession on application to the Company.

THE BOVININE COMPANY, 32 SNOW HILL, LONDON, E.C.

Sold by Chemists. In Bottles, 12 *oz.*, 4*s.* 6*d.*; 6 *oz.*, 2*s.* 9*d.*

DIABETES.

BONTHRON & CO.'S

Gluten Bread and Biscuits,

Recommended by Dr. PAVY.

Every Variety of Gluten, Almond Bran, Chocolate Cocoanut for Diabetic Dietary.

SEND FOR PRICE LISTS.

BONTHRON & CO., 106 Regent-street, LONDON.

GOLD MEDAL, International Health Exhibition, London, 1884.
First Order of Merit & Medal (Highest Award), Adelaide, 1887
HIGHEST AWARD, Medical & Sanitary Exhibition, London, 1882
First Order of Merit and Medal, Melbourne, 1888.

BENGER'S FOOD

FOR INFANTS, CHILDREN, AND INVALIDS.

This delicious and highly nutritive Food was awarded the GOLD MEDAL at the International Health Exhibition, London, and has since received a High Award at every Exhibition at which it has been shown.

BENGER'S FOOD is well known to leading medical men, and is recommended by them.

The following extracts from the Medical Journals sufficiently indicate its high character, and the estimation in which it is held alike by the Medical Profession and by the Public:—

The LANCET of March 25th, 1882, says:—

"Would be assimilated with great ease."

The BRITISH MEDICAL JOURNAL, Aug. 25th, 1883, says:—

"Benger's Food has by its excellence established a reputation of its own."

The ILLUSTRATED MEDICAL NEWS, Dec. 22, 1888, says:—

"Benger's Food is a preparation devised on original lines, and which we can speak of in the highest terms. . . . Infants do remarkably well on it, and it is most suitable for many conditions in adults and old people. Amongst other things, we may mention that this food has been found extremely useful in the Summer Diarrhœa met with in some of our Colonies, where the distaste for food and difficulty of digestion are very marked. There is certainly a great future before it."

The LONDON MEDICAL RECORD, March 15, 1882, says:—

"It is palatable and excellent in every way. It is taken readily both by adults and children. We have given it in very many cases with the most marked benefit, patients frequently retaining it after every other food has been rejected. For children who throw up their food in curdled masses it is invaluable."

The JOURNAL DE MÉDICINE DE PARIS, March 17, 1889, says:—

"C'est un exemple heureux de l'application des données de la science à la pratique, et nous ne doutons pas que ce produit ne jouisse bientôt en France de la grande vogue qu'il s'est légitimement acquise en Angleterre."

The HEALTH JOURNAL, November, 1883, says:—

"We direct especial attention to this article, because it is a good illustration of the practical application of scientific knowledge to one of the every day requirements of mankind."

From an Eminent Surgeon.

"After a lengthened experience of Foods, both at home and in India, I consider 'Benger's Food' incomparably superior to any I have ever prescribed."

A Medical Man writes:—

"This particular food is the only one I have been able to take constantly and with advantage. I have prescribed it for others with the best results."

BENGER'S FOOD is sold in Tins at 1s. 6d., 2s. 6d., 5s., & 10s. each, by Chemists, &c., everywhere; and may be obtained through all the leading Wholesale Houses, or of the MANUFACTURERS—

F. B. BENGER & CO., Limited,
OTTER WORKS, MANCHESTER.

LIQ. RUSCI DETERGENS
(GODFREY & COOKE.)

AN ALCOHOLIC SOLUTION OF THE OL. RUSCI,
Or RUSSIAN BIRCH TAR.
As Originally Prescribed by Mr. Malcolm Morris.
Useful in Chronic Skin Affections, especially Eczema.
MIXES WELL WITH WATER.
One Teaspoonful to a Wineglass as a Local Application.

"GODFREY & COOKE have done a real service to Medicine in devising the Liq. Rusci Detergens. It is now largely prescribed by Mr. Malcolm Morris and other eminent dermatologists."

In Bottles, 3/6, 6/-, & 10/6 each.

Sole Makers—GODFREY & COOKE, 30 Conduit Street, Bond Street, W.

NERVOUS EXHAUSTION.

PULVERMACHER'S WORLD-FAMED GALVANIC BELTS, for the cure of NERVOUS Diseases, have received Testimonials from Three Physicians to Her Majesty the Queen, and over Forty Members of the Royal College of Physicians of London.

The distressing symptoms of NERVOUS EXHAUSTION, loss of MUSCULAR POWER, RHEUMATISM, SCIATICA, PARALYSIS, EPILEPSY, &c., are speedily removed by means of PULVERMACHER'S WORLD-FAMED GALVANIC BELTS, which convey the electric current direct to the affected parts, gradually stimulating and strengthening all the nerves and muscles, and speedily arresting all symptoms of premature waste and decay.

Dr. VINES, Fellow of the Royal College of Physicians, writes, 19th September, 1885:—"Having used Mr. PULVERMACHER'S BELTS for many years, in the course of medical practice, I am in a position to speak of their great value as a curative agent in cases of nervous disease or functional malady where Electricity is likely to be serviceable. I am entirely convinced of their efficacy."

Dr. H. A. ALLBUTT, M.R.C.P., 24 Park Square, Leeds, writes, October, 1888:—"I always recommend with confidence Mr. PULVERMACHER'S BELTS. Ladies recovering from illness incidental to their sex will find these BELTS of vast assistance in restoring lost nerve power."

SIR CHARLES LOCOCK, Bart., M.D., says—"PULVERMACHER'S BELTS are very effective in neuralgia and rheumatic affections, and I have prescribed them largely in my practice for other similar maladies, paralysis," &c.

For full Price List and Particulars see new Pamphlet—"GALVANISM: NATURE'S CHIEF RESTORER OF IMPAIRED VITAL ENERGY." Post free from

PULVERMACHER'S Galvanic Establishment,
194 Regent-street, London, W.
ESTABLISHED OVER FORTY YEARS

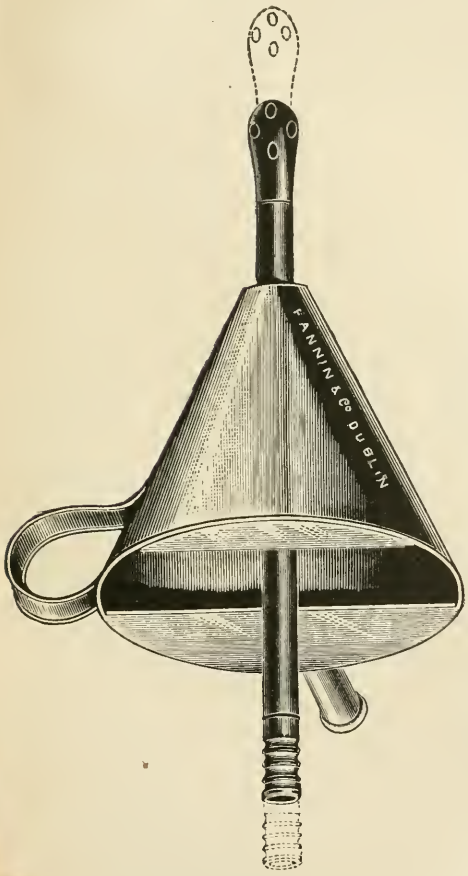
FANNIN & CO., *SOLE AGENTS FOR IRELAND,*
41 GRAFTON-STREET, DUBLIN.

A New Form of Vaginal Irrigating Tube.

By ALEXANDER DUKE, F.R.C.S.,

Obstetric Physician to Steevens' Hospital.

Price 10s. 6d.



Extract from "Medical Press,"
April 20, 1892.

It is almost an impossibility with the ordinary means at our disposal to wash out the vagina while the patient is in the recumbent position without wetting either the bed or couch on which she lies.

It will be generally admitted that the principal value of a vaginal lavement will be lost if not administered while in the recumbent position, so that I venture to hope that the appliance illustrated will be found in every-day practice to supply a want both to obstetrician, gynæcologist, and monthly nurse. By the use of this simple form of irrigator tube all wetting of the bed and patient will be avoided, whether used by the patient herself or employed by her attendant. The usual preliminary alteration of the patient's position, bringing hips to edge of bed, waterproof sheet, &c., can all be dispensed with.

The appliance consists of an ordinary funnel through which a vulcanite or glass tube passes, and which can be shortened or lengthened at will. This tube with apex of funnel is to be introduced into vagina (the former having been previously filled with water), both are now pressed firmly into the passage and held in close contact with the vulva. The lavement is then to be administered in the usual way, either by syringe or douche, and if the funnel be properly held, *the return current cannot possibly escape except round the tube into the apex of the funnel in vagina ;* and so finds its way out of exit pipe on side of same, to which tubing may be attached leading to vessel underneath the bed if desired.

Having experienced the comfort and saving of both time and temper by the use of the appliance described, I have no hesitation in recommending its adoption as a vast improvement on any form of vaginal tube I have ever heard of, or seen pictured in any of the various surgical instrument catalogues extant.

MANUFACTURED BY

FANNIN & COMPANY,

Surgical Instrument Makers,

41 GRAFTON-STREET, DUBLIN.

Apollinaris

THE TIMES writes :—

"APOLLINARIS WATER is as familiar in millions of mouths as any household word."

"THOSE WHO who are in health hope to remain well by making APOLLINARIS their habitual beverage."

"INVALIDS are recommended to drink it in order to get rid of their ailments."

"The water is cheap as well as good."

"The demand for it is great and increasing."

"The popularity of APOLLINARIS WATER is chiefly due to its irreproachable character."

"THE BOTTLED WATER is not only as pure but as gaseous as the same water is far down in the rock, through a fissure in which it ascends."

"THE DRINKER is certain of obtaining it in its purely natural state."

"THE PLEASANT TASTE is due to its chemical constituents, and for the same reason the water itself is more wholesome than any aërated one which art can supply."

Apollinaris,

"THE QUEEN OF TABLE WATERS."

THE APOLLINARIS CO., LTD., 19 REGENT-ST., LONDON.